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The Symposium on Reparative Surgery to which the entire April (New York) Number of the *Surgical Clinics of North America* is devoted, is one of the most extensively and beautifully illustrated numbers we have ever published. There are 303 illustrations on 140 figures, and most of these pictures show actual step-by-step operative technic.

This Symposium deals with such subjects of present-day importance as Film-cemented Skin Grafts, Use of Small Pieces of Film-covered Skin Grafts, Open Abdominal Flaps for Repair of Surface Defects of Upper Extremity, Free Skin Grafts in Surface Defects, Surgical Treatment of Malignant Melanomas of the Skin, Depressed Fracture of Orbital Rim, Eyelid Deformities, Surgical Correction of Congenital Cleft Palate, Skeletal Fixation in Fractures of Mandible, Osteomyelitis of Jaws, Cartilage Grafting, Reparative Problems in Orthopedic Surgery, Amputations, the Intervertebral Disk Complex, and Anesthesia in Plastic and Maxillofacial Surgery.

To both civilian and military surgeons this April Symposium is of unmistakable importance.

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AN ARSENICAL WITH A BRILLIANT RECORD OF EFFECTIVENESS AND SAFETY
MAPHARSEN
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MULTIPLE ECHINOCOCCUS CYSTS OF THE LUNG, LIVER AND ABDOMEN

COMMANDER EMILE HOLMAN (MC), U.S.N.R.
AND
PHILIP PIERSON, M.D.
SAN FRANCISCO

The diagnosis of hydatid disease in America, particularly in the Western sheep-raising states, no longer provokes surprise or elation in encountering a medical rarity. In certain localities in Australia,[1] Italy, Argentina[2] and Iceland hydatid disease receives the first consideration in diagnostic problems, whereas in this country it is usually offered last as a remote possibility. It may be confidently predicted, however, that its occurrence here will become more frequent and that in certain localities its presence must be suspected whenever unusual manifestations of hepatic or pulmonary disorders cannot be explained on other seemingly more rational bases.

The disease is most commonly found in areas where sheep pasturage prevails and where dogs are in intimate association with sheep and human beings. The cysts found in man, sheep, ox or hog represent the larval stage of the tapeworm Taenia echinococcus, which is harbored in the adult form in the intestine of dogs and related species. The egg liberated in the dog's intestine and transferred from dog to man, sheep or hog through intimate contact reaches the stomach and the small intestine, where the alkaline juices digest the egg membrane, liberating the embryo, which penetrates the wall of the intestine and reaches the liver and other organs by blood stream migration. In its new location the embryo is soon surrounded by a limiting membrane produced by foreign body reaction, within which a germinal layer is developed capable of producing innumerable brood capsules and daughter cysts. The life cycle of the tapeworm is completed when a dog or a member of related species eats the infected entrails or carcass of a sheep or hog and the larvae reach the intestine of the dog, where they mature into the adult tapeworm.

Although infection in man has been ascribed to eating infected berries growing in sections of the country inhabited by infected moose and wolf,[3] this must be very rare and most improbable.

As we become more conscious of its existence, greater care must be exercised in its diagnosis, and one must not be too easily led into a facile though false diagnosis on the basis of a positive complement fixation or a positive reaction to the intradermal test. Both have been found fallible, as experience sadly records. One of the always surprising features of the disease is the extent to which organs may be involved without subjective or objective evidence of its presence. Moreover, if one accepts Dew's[4] estimate of the rate of increase in the size of a cyst as approximately 1 mm. a month, the disease has been present for years before asserting its presence either subjectively or objectively.

The following cases are presented for their unusual and instructive clinical features, and for the problems presented in their surgical removal:

CASE 1.—M. Y., a Basque sheep herder aged 53, born in the Pyrenees but a resident of this country for many years, had recently noted an increasing shortness of breath with some thoracic pain, but without cough, sputum or hemoptysis. The patient was short and overweight, the only obvious abnormality being a small epigastric midline hernia. Examination of the chest disclosed expansion equal but limited, dulness at both bases and particularly in the right midportion, but some also in the left midportion. The apexes were resonant. The breath sounds were diminished throughout both lungs, but no rales were heard. His heart was normal; the blood pressure was 132 systolic, 90 diastolic. There was no enlargement of the liver. The red cells numbered 5,590,000 per cubic millimeter, the white cells 11,000 without eosinophils, the hemoglobin 99 per cent. The patient was extremely sensitive to echinococcus cyst fluid introduced intracutaneously.

A roentgenogram (fig. 1) revealed two large cannon-ball shadows in the chest. Under fluoroscopic examination the exact site of the attachment of the cyst to the right parietal pleura was determined as being posterior to the 4th rib, and on the left the nearest approach to the cyst was found to be at the level of the 7th rib anteriorly.

After several days of high vitamin diet supplemented by vitamin concentrates, the first operation was performed on Sept. 10, 1938. Under cyclopropane anesthesia a portion of the right 4th rib between the posterior and the anterior axillary line was removed. The cyst was found to be firmly adherent to the parietal pleura. A large trocar was inserted, and the limpid, slightly milky fluid was aspirated and sent to the clinical laboratory in a sterile container for diagnostic use in other suspected cases. About 10 cc. of solution of formaldehyde diluted 1:10 was introduced in the cyst, and after a few minutes wait the cyst was incised and its contents, including many daughter cysts and the germinal layer, were easily separated from their attachments and sucked out with the sucker usually employed in tonsillectomy. Following the delivery of the cyst wall, apparently normal surface of lung, as disclosed by carbon particles normally deposited in alveoli,

From the Departments of Surgery and Medicine, Stanford University School of Medicine.

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1. Robb, D.: Hydatid Cyst of Lung with Extraordinary Complications, Australian & New Zealand J. Surg. **10**: 191 (Oct.) 1940. Barnett, L.: Incidence and Prevention of Hydatid Disease, New Zealand M. J. **41**: 258 (Dec.) 1942. Dew.[4]

2. Ivanissevich, O., and Rivas, C. J.: Tratamiento de los quistes hidatídicos del pulmón, Bol. d. Inst. clin. quir. **18**: 458 (July) 1942. Jorge, J. M., and Goñi Moreno, I.: Hidatidosis secundaria broncogenética, Bol. y trab., Acad. argent. de cir. **26**: 373 (June 10) 1942. Arce, J.: Hydatid Disease (Hydatidosis): Hydatid Cyst of Lung, Arch. Surg. **43**: 789 (Nov.) 1941.

3. Brown, A.: Hydatids of the Chest Wall, in Christopher, Frederick: Textbook of Surgery, ed. 3, Philadelphia, W. B. Saunders Company, 1942, p. 947.

4. Dew, H. R.: Hydatid Disease: Its Pathology, Diagnosis and Treatment, Sydney, Australasian Medical Publishing Company, Ltd., 1928.

was everywhere visible in the cavity formerly occupied by the cyst. The cavity was thoroughly wiped with gauze moistened with 10 per cent solution of formaldehyde and washed out with salt solution. A small catheter was placed in the cavity, emerging from the anterior end of the wound. No attempt was made to obliterate the cavity by sutures, as it

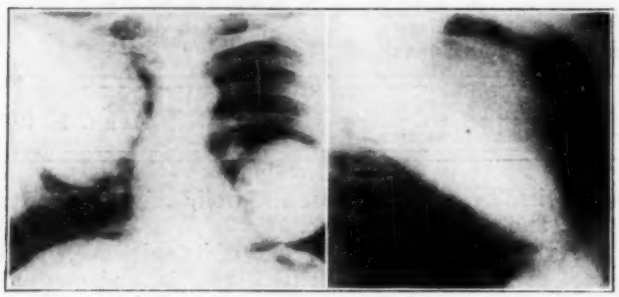

Fig. 1 (case 1).—Multiple echinococcus cysts of the lung in a sheep herder aged 53.

was easily collapsed by positive intratracheal pressure. The wound was closed in layers with interrupted sutures. When the last stitch was placed, a pronounced emphysema of the wound tissues prompted opening the previously clamped catheter. A steady stream of air escaped, indicating a fairly large opening into the bronchus.

Immediately after closure of the first wound, a second incision was made over the left 7th rib and a portion removed. The visceral pleura was everywhere free, as shown by a freely moving lung visible through the intact parietal pleura. Accordingly the 6th rib was removed, but again a freely moving lung was visible through the intact parietal pleura. Two large plain gauze packs were placed in the wound, compressing the area immediately over the cyst, with the expectation that the visceral and parietal pleurae would become adherent. The wound was closed without drainage, completely burying the gauze packs.

The catheter emerging from the cyst cavity on the right was placed under water, and for about twenty-four hours there was a free discharge of air through the tube, after which there was no further escape of air. About 1 ounce (30 cc.) of bloody fluid was discharged in the next twenty-four hours, at the end of which time the catheter was removed. A small drain of rubber tissue which had been placed at the angle of the wound was also removed after forty-eight hours had elapsed.

After operation the patient was somewhat dyspneic, and intranasal oxygen was administered for five days. On the 7th day the wound in the left chest discharged considerable blood tinged but clear fluid. A roentgenogram revealed a fluid level in the left lower chest. Under cyclopropane anesthesia the wound on the left was reopened and the gauze removed. Although the parietal pleura was thickened and opaque, an incision led directly into the pleural space with the escape of clear yellow fluid. The visceral pleura was nowhere adherent, but the cyst could be delivered easily into the wound. Two traction sutures were applied to the presenting cyst wall and, following the aspiration of 20 cc. of cyst fluid, 20 cc. of 10 per cent solution of formaldehyde was injected into the cyst. After the lapse of a few minutes the cyst wall was incised between the traction sutures and its contents were sucked out, including the germinal layer lining the cavity. The walls of the cavity were wiped with gauze moistened with 10 per cent solution of formaldehyde and the cavity washed with saline solution. A small catheter was placed in the bed of the cavity and connected with rubber tubing leading to an underwater seal. The wound in the chest wall was closed tightly around the catheter with interrupted sutures. There was no escape of air at any time, and the catheter was removed on the third day. An uneventful recovery followed, with primary healing of both wounds (fig. 2).

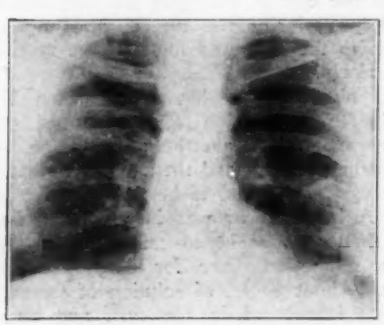

Fig. 2 (case 1).—Appearance of lung following removal of cysts in two stage operation (see fig. 1).

The patient reentered the hospital for the repair of the epigastric hernia on July 23, 1941, three years later, at which time he was without symptoms of any kind referable to the chest, and roentgenograms were normal.

Case 2.—B. R., a school girl aged 18 years, was operated on in March 1942 for appendicitis, when a pelvic cyst adjacent to the right ovary was accidentally opened and found to contain numerous daughter cysts. These proved on microscopic section to be echinococcus cysts. Postoperatively a pulmonary complication occurred which necessitated a roentgenogram of the chest. This disclosed rounded shadows above the right diaphragm, which were interpreted as being located in the lung. Complete recovery followed the appendectomy.

On May 19, 1942 the patient entered Stanford Hospital for further study and treatment.

Her past history revealed little illness except for the previous appendectomy. Despite a voracious appetite she had lost about 6 pounds (2.7 Kg.) in the three months preceding admission. As a child she had played constantly with 3 dogs.

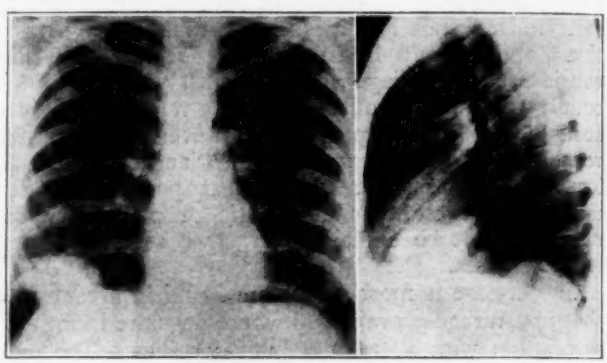

Fig. 3 (case 2).—Echinococcus cysts of the liver projecting into the pleural cavity, but not into the lung, by penetration through the diaphragm.

Physical examination revealed few abnormalities. There were pleural crepitations low in the right anterior axillary line with suppression of breath sounds, but otherwise the lungs were clear. The liver and spleen were not felt, and there were no abnormal masses felt in the abdomen. Her temperature was 37.2 C. (98.9 F.), pulse rate 90, respiratory rate 20, blood pressure 106/72. The urine was normal, the red cells numbered 4,930,000 and the white cells 9,970, of which 59 per cent were neutrophils, 1 per cent eosinophils, 39 per cent lymphocytes and 1 per cent monocytes; the hemoglobin was 91 per cent (Sahli).

The echinococcus skin test was strongly positive, the immediate reaction showing a 10 mm. wheal, with pseudopodia, and a 50 mm. zone of erythema.

A pneumoperitoneum suggested abnormal contours both of the spleen and of the liver suggestive of cysts in these organs, but the masses seen in the roentgenogram of the chest still seemed to be in the lung (fig. 3).

On May 21 a thoracotomy was performed under cyclopropane anesthesia. An anterolateral incision was made in the sixth interspace without division or excision of the ribs, which were easily separated with the rib spreader. When the lung was severed from its attachments to the diaphragm, there were disclosed emerging through the dome of the diaphragm 3 separate cystic masses measuring 4 by 6 cm., 4 by 4 cm. and 3 by 3 cm. respectively. In an attempt to excise the largest, its wall was penetrated with the evacuation of clear fluid and many daughter cysts. These were all carefully sucked up by the aspirator. The diaphragm was incised, revealing at least 2 large cysts in the liver, which were the

source of the masses penetrating the diaphragm. Another thin walled cyst could be palpated on the under surface of the liver lateral to the gallbladder. One of the cysts in the liver was opened, and milky fluid and many daughter cysts were evacuated by suction. The lining of the cyst was also carefully removed in its entirety by suction, revealing a fibrous lined cavity in the liver at least 10 cm. in diameter. The walls of the cavity were wiped with gauze moistened with 10 per cent solution of formaldehyde and the cavity was washed with saline solution.

The second cyst in the liver was opened and similarly treated by evacuation with suction, removal of the entire cyst lining by suction, followed by the application of 10 per cent solution of formaldehyde to the walls of the cavity. This cyst was multilocular, about 10 cm. in diameter. The portion of the diaphragm through which the cysts had penetrated into the thorax was cleanly excised by an encircling incision through normal diaphragm. The two cavities in the liver were partially closed by chromic catgut sutures approximating their fibrous walls. Salt solution was introduced to fill any residual spaces. The phrenic nerve was crushed as it coursed over the pericardium, and the rent in the paralyzed diaphragm was easily closed with interrupted silk sutures. This closure of the diaphragm was easily made because of the collapse of the underlying two large intrahepatic cysts. Palpation and systematic examination of the accessible lung having revealed no evidence of other cysts, the incision in the thoracic wall was

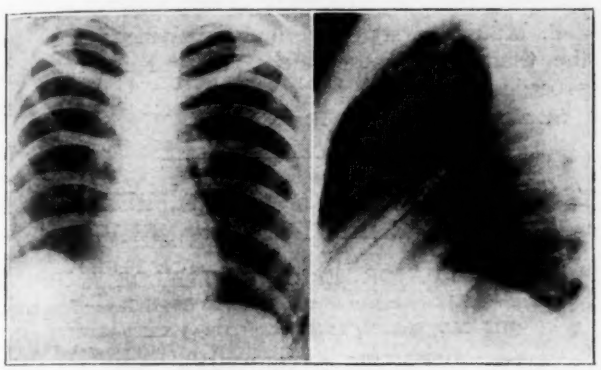

Fig. 4 (case 2).—Appearance after operation, showing elevated diaphragm following excision of portion of diaphragm containing cysts and crushing of phrenic nerve (see fig. 3).

closed in layers. The lung was well inflated before closure, and drainage was not provided.

The postoperative course was without incident until the 6th day, when generalized abdominal pain, tenderness without much splinting, a chill, temperature of 40 C. (104 F.) and a pulse rate of 140 caused considerable apprehension lest the subhepatic cyst palpated at the operation had ruptured into the abdominal cavity. Subsequent events proved that this had not occurred. The 7th day was a repetition of the 6th, but gradual improvement thereafter led to complete recovery and discharge from the hospital on the 17th postoperative day. The two days of fever were explained on the probable discharge into the abdominal cavity of salt solution which had been placed in the formaldehyde treated cavities in the liver.

Following an uneventful convalescence the patient reentered the hospital on August 10 for laparotomy and removal of the subhepatic cyst. In the interim she had gained about 8 pounds (3.6 Kg.) and felt very well except for occasional pains in the right flank. Physical examination revealed few abnormalities. The temperature was 36.8 C. (98.2 F.), pulse rate 70, respiratory rate 18 and blood pressure 120/70. The chest showed a well healed scar and the physical signs of an elevated paralyzed diaphragm. The abdomen was free from tenderness or abnormal masses. The urine was normal. The red cells numbered 4,490,000 per cubic millimeter and the white cells 8,050, of which 72 per cent were neutrophils, 4 per cent eosinophils, 1 per cent basophils, 16 per cent lymphocytes and 7 per cent monocytes. A roentgenogram of the chest (fig. 4) showed both peripheral lung fields clear and paradoxical movements of the right diaphragm.

On August 13 a short upper right rectus incision was made for exploration of the abdomen. In the right pelvis was a 2 cm. nodule (fig. 5 *b*). After the incision had been enlarged this was found to lie just lateral to and firmly attached to the uterus, partially surrounded by omentum. It was excised with the radiocautery. In the left upper abdomen, lying between the

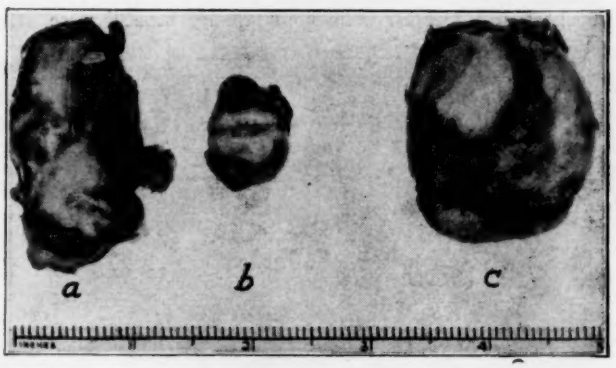

Fig. 5 (case 2).—*a*, echinococcus cyst removed from between left diaphragm and spleen; *b*, cyst excised from right pelvis; *c*, cyst excised from undersurface of liver.

spleen and the diaphragm, was a second 5 cm. nodule (fig. 5 *a*), which was freed from the spleen with considerable bleeding. Its excision from the diaphragm left a small defect, which was closed with catgut sutures. These were covered by the spleen when it fell back into its normal bed.

A third 4 cm. sized cyst (fig. 5 *c*) was removed intact from the under surface of the liver, leaving a raw liver surface, which was partially closed with a continuous catgut suture. A search of the abdomen for other cysts or masses was negative. Because of the possibility of bile drainage from the bed of the third cyst, three small cigaret drains were introduced to lie adjacent to the raw surface, emerging from a separate stab wound in the flank. During the operation 1,000 cc. of isotonic solution of sodium chloride was administered by hypodermoclysis and 500 cc. of blood by vein.

An uneventful recovery was followed by discharge from the hospital on the 12th postoperative day.

The following case is presented briefly because of the difficulties of diagnosis and because of erroneous conclusions based on a strongly positive reaction to the intradermal injection of echinococcus fluid.

CASE 3.—Mrs. E. P., aged 59, had been under observation at a naval hospital since Dec. 24, 1941 for cough, bloody sputum and pain in the right chest, when she entered a civilian

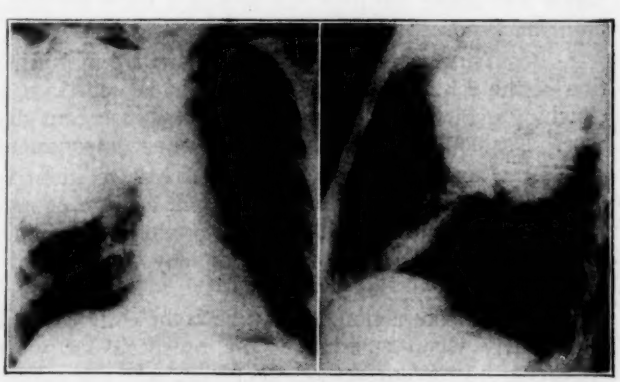

Fig. 6 (case 3).—Presence in chest on Aug. 10, 1942 of a large mass interpreted as being compatible with echinococcus disease, this diagnosis undoubtedly being influenced by a strongly positive intradermal test for echinococcus.

hospital for further examination. Here the intradermal injection of echinococcus fluid produced a definite local urticarial reaction, elevation of temperature and pronounced focal signs and symptoms in the right chest. A roentgenogram (fig. 6) was interpreted as being compatible with echinococcus disease.

A review of the evidence, however, revealed certain significant findings: A roentgenogram in December 1941 (fig. 7) was interpreted as showing multiple metastatic nodules in the right upper lung field, the source of which had not been determined even after numerous other roentgenographic studies. A bronchoscopy on Jan. 5, 1942 had disclosed a "widening and thickening of the mediastinum," which was even more pronounced on April 17, when both primary bronchi were found

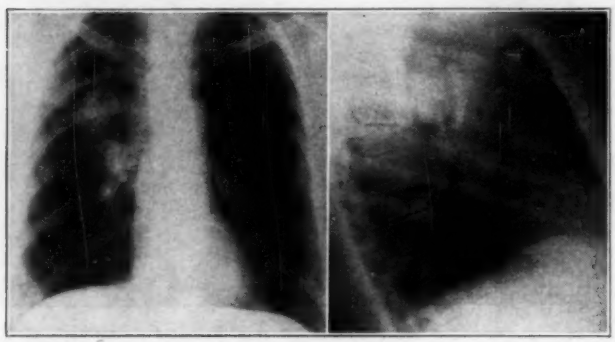

Fig. 7 (case 3).—Presence on Dec. 24, 1941 of multiple masses interpreted as being metastatic tumors of unknown origin. A primary bronchogenic tumor was subsequently established. The appearance at this early date bears no resemblance to echinococcus disease, although later studies might be so interpreted (fig. 6).

stenosed by flattening of their medial walls, strong evidence of a mediastinal neoplasm, probably metastatic. On Aug. 28, 1942, on a preoperative diagnosis of an intrapulmonary neoplasm, a short exploratory incision was made by resection of 4 cm. of the 4th rib posteriorly. A large firm, solid mass was found in the lung, biopsy of which disclosed a cellular tumor composed of sheets of large epithelial tumor cells, some of which showed an alveolar arrangement, with many mitotic figures. The diagnosis was an anaplastic carcinoma of the bronchus. As all evidence, roentgenographic as well as bronchoscopic, indicated a totally inoperable neoplasm, the wound was closed without attempting a pneumonectomy. The patient died four weeks later. A necropsy was not permitted.

COMMENT AND SUMMARY

1. Multiple echinococcus cysts may occur in the lung, in the abdomen and in the liver, almost without symptoms. In case 1, 2 large cysts of the lung which had probably been present for years produced only moderate dyspnea and some pain in the chest. In case 2, symptoms were minimal, despite multiple abdominal cysts in the pelvis and under the liver, as well as 4 cysts involving both diaphragms, and 2 large intrahepatic cysts.

2. Positive reactions following the intradermal injection of the echinococcus antigen cannot be relied on as clinching evidence in the diagnosis of echinococcus disease. Eosinophilia is not an invariable accompaniment.

3. In cases in which the cyst is in close relationship to the upper surface of the diaphragm, a large enough pneumoperitoneum should be given to explore the under surface clearly, since hepatic cysts may penetrate the diaphragm.

4. Cysts in the abdomen may be completely excised, particularly when surrounded by omentum or when appearing on the surface of other organs. The investing fibrous tissue, which is often partly calcified, permits excision without fear of entering the cyst. When calcification has occurred in the liver or lung, it is necessary only to suck out the chitinous or germinal layer of the cyst, leaving behind the calcified wall.

5. The removal of thin walled cysts of the lung by suction may be complicated by a pneumothorax, resulting presumably from small rents in the lung, unless provision for the escape of air is made at the operation by the introduction of a small catheter into the bed of the cyst connected externally with an under water seal. This may usually be removed within forty-eight to seventy-two hours.

6. The problem of removal of the dangerous elements of a cyst may be met as follows: Withdrawal of about 30 to 50 cc. of the cyst fluid by aspirating syringe and reinjection of about 10 to 20 cc. of 10 per cent solution of formaldehyde. After several minutes a small incision is made in the cyst, and its contents are withdrawn with a large sucker. The contents include hooklets, daughter cysts and the germinal layer, which strips easily and is effectively removed with the sucker. The walls of the remaining cavity are wiped with gauze moistened with 10 per cent solution of formaldehyde and the cavity is washed out with saline solution.

7. Drainage or packing of the cyst cavity is not necessary and is definitely contraindicated to avoid secondary infection of a potentially incollapsible cavity. Except in the presence of pus due to a secondary infection which obviously must be drained, the cyst cavity may be filled with salt solution and the incision of approach may be completely closed without drainage.

8. Multiple cysts of the lung involving both sides of the thorax are most safely removed by two stage procedures.

Stanford Hospital—490 Post Street.

THE ORGANIZATION OF A RED BLOOD CELL TRANSFUSION SERVICE

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DETROIT

Attention has recently been focused on the use of red cell residues that are by-products of plasma production as a substitute for whole blood transfusions in the treatment of anemia.

The first work in the preservation of red blood cells suspended in isotonic solution of sodium chloride was reported by Rous and Turner [1] in 1916. Their experiments, however, were limited to animal transfusions. In 1918 Robertson,[2] in reporting the first blood bank transfusions in World War I, actually gave red cell suspensions rather than whole blood. Concentrated red cell transfusions were reported by Castellanos [3] in 1937 and by Castellanos and Riera.[4] Since 1940 there have been a number of reports by British workers on the practicality of giving multiple red cell transfusions both in the concentrated form and resuspended

From the American Red Cross Blood Donor Service.

1. Rous, P., and Turner, J. R.: Preservation of Living Red Cells in Vitro, J. Exper. Med. **23**: 219 (Feb.) 1916.
2. Robertson, O. H.: Transfusion with Preserved Red Cells, Brit. M. J. **1**: 691 (June 22) 1918.
3. Castellanos, A.: La transfusion de globules, Arch. de med. inf. **6**: 319 (July-Sept.) 1937.
4. Castellanos, A., and Riera, R.: Sobre la transfusion de globulos y la transfusion de plasma; sus tecnicas e indicaciones, Bol. Soc. cubana de pediat. **9**: 234 (June) 1937.

in isotonic solutions.[5] The more recent articles[6] in this country confirm on the whole the results obtained and point out not only the saving in whole blood but also the superiority of red cell transfusion in the treatment of certain anemias.

The "Blood for Britain" (plasma) program (1940),[7] a cooperative project of the New York chapter of the American Red Cross and the Blood Transfusion Association, was the first experience in this country with large scale blood procurement. The Presbyterian Hospital in New York City was one of the nine hospitals assisting in the work, and here the plasma was produced by the sedimentation method after three days. This made available in the hospital for the first time a large source of supply of fresh red cells. Plasma formerly had been but a by-product of "outdated" whole blood in the bank, and the "outdated" residual cells were not suitable for transfusion purposes. Scudder[8] prepared and gave 227 red cell transfusions obtained from fresh citrated blood during this period. The suspensions were isotonic, usually 500 cc. of cell residual in 500 cc. of isotonic solution of sodium chloride. These transfusions were type specific. The reactions rate was comparable to the existing one at the hospital for whole blood transfusions.

During the past three years a number of the larger hospitals in this country, both military and civilian, have used red cell suspensions on a small scale for transfusion. The material has been available as a by-product of plasma production and has been offered as an additional blood bank service[9] in these hospitals. Hoxworth[10] at the Cincinnati General Hospital has provided red cell suspensions for transfusions as part of the regular service of the blood and plasma bank. Over 300 of these transfusions have been given there, with results in general agreement with the findings reported in the literature.

Almost immediately after the conclusion of the Blood for Britain project, the pilot center of the American Red Cross Blood Donor Service was established in New York City in February 1941.[11] The distance of the processing laboratory from the bleeding center, however, precluded any possibility of salvage of the red cells for transfusion purposes. With the rapid expansion of the Blood Donor Service, processing laboratories and bleeding centers at various points in the country came into closer proximity. However, even then large scale work with red cell suspensions was delayed until a year ago, because of the primary necessity of concentrating all efforts on plasma production.

The salvage of red cell residues for transfusion purposes presented several problems to the Blood Donor Service not encountered in local blood and plasma banks. The blood was collected by a bleeding team at varying distances from the laboratory. The blood had to be transported to the laboratory and, after withdrawal of the plasma, the residual cells had to be resuspended and then shipped back to the blood donor center for distribution and use. The question arose whether significant change would take place in the cells because of the transportation. Further, the handling of the blood by three separate groups of people not only offered the chance for breaks in technic because of divided responsibility but also gave real opportunity for transcription errors. In order that the greatest possible plasma yield might be obtained, the blood is centrifuged at 2,100-2,400 revolutions per minute for thirty to forty-five minutes. What effect there would be on the fragility of the cells as contrasted to those obtained as a by-product of sedimentation methods or of slower centrifugation had to be determined. With the transportation and multiple handlings necessary, the problem of placing responsibility for the quality of the final product had to be clarified.

Because of these specific problems not similarly encountered in other work in this field, much of the previous work had to be repeated before it could be determined whether the results were applicable also to red cells treated as these must be.

Within the last year one (W. B. C.)[12] and later another of us (W. T.) have prepared and have given nearly 10,000 red cell transfusions. The majority have been type specific. The cells have been resuspended in pyrogen free isotonic solution of sodium chloride up to the original 500 cc. volume. The clinical results of this work are being reported in detail.[13] In conjunction with this, studies on the sterility of the cells and the survival in vivo of the cells after transfusion have been carried out. The life of the cells in vitro as measured by degree of hemolysis and cell fragility in various types of preservative solutions has also been investigated. The particular response to this therapy in specific types of anemia has also been noted.

On the basis of these pilot studies a Red Blood Cell Transfusion Service has been organized, to be conducted by the technical staff of the American Red Cross Blood Donor Service. The technical operations of the service are under the supervision of the Division of Medical Sciences of the National Research Council through its Subcommittee on Blood Substitutes.

The Red Blood Cell Transfusion Service is operated locally through Red Cross blood donor centers, under the control in each center of its technical supervisor. It is being initiated only in those centers that are sufficiently near processing laboratories to allow close collaboration and where transportation between the center and the laboratory requires only a short time.

The service is conducted without cost to those being served. No financial profit is allowed to be made by any person or institution in connection with this service, since the project is supported financially by the American Red Cross as part of its blood donor service.

The service is tendered to military hospitals wherever requested and practical. It is to be extended to com-

5. Watson, L.: Red Cell Suspension and Transfusion, Lancet **1**: 107 (Jan. 23) 1943. MacQuaide, D. H. G., and Mollison, P. L.: Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells, Brit. M. J. **2**: 555 (Oct. 26) 1940. Dacie, J. V., and Mollison, P. L.: Survival of Normal Erythrocytes After Transfusion in Patients with Familial Hemolytic Jaundice, Lancet **1**: 550 (May 1) 1943. Davidson, S., and Stewart, C. P.: Transfusion of Red Cells, Correspondence, Brit. M. J. **1**: 644 (April 26) 1941. Williams, G. E. O., and Davie, T. B.: Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia, ibid. **2**: 641 (Nov. 8) 1941. Whitby, L. E. H.; Vaughan, J., and Brown, H.: Discussion on Therapeutic Value of Transfusion of Derivatives of Blood, Proc. Roy. Soc. Med. **34**: 257 (March) 1941.

6. Alt, H.: Red Cell Transfusions in the Treatment of Anemia, J. A. M. A. **122**: 417 (June 12) 1943. Evans, R. S.: Concentrated Red Cells as a Substitute for Whole Blood in Transfusion Therapy of Anemia, ibid. **122**: 793 (July 17) 1943. Murray, C. K.; Hale, D. E., and Shaar, C. M.: Red Blood Cell Suspension Treatment of Anemia, ibid. **122**: 1065 (Aug. 14) 1943. Blum, L. L.: Present Day Status of Combined Blood Plasma Bank with Reference to the Use of Concentrated Red Cell Suspensions, J. Indiana M. A. **36**: 187 (April) 1943. Lindy, J. S., and others: Annual Report for 1942 of Section on Anesthesia, Including Data and Remarks Concerning Transfusion of and Suspension of Erythrocytes, Proc. Staff Meet., Mayo Clin. **18**: 148 (May 19) 1943.

7. Report of the Blood Transfusion Association Concerning the Project for Supplying Blood Plasma to England, carried on jointly with the American Red Cross from August 1940 to January 1941.

8. Scudder, J., cited by Taylor, E. S., in discussion on Use of Substitutes for Blood Transfusion, New York State J. Med. **42**: 1480 (Aug. 1) 1942.

9. Annual Report for 1942 of the Section on Anaesthesia, Including Data and Remarks Concerning Blood Transfusion and the Use of Blood Substitutes, Proc. Staff Meet., Mayo Clin. **18**: 148 (May 19) 1943.

10. Hoxworth, P.: Personal communication to the authors.

11. Taylor, E. S.: Blood Procurement for the Army and Navy, J. A. M. A. **117**: 2123 (Dec. 20) 1941.

12. Red Blood Cells Salvage, Science News Letter **43**: 138 (Feb. 27) 1943.

13. Cooksey, W. B., and Horwitz, W. H.: Use of Salvaged Red Cells, to be published.

munities when it is practical by furnishing red cell suspensions to selected physicians for use in hospitals of recognized standing for clinical investigation. The selection of physicians and hospitals is made as agreed on by the American Red Cross and the Division of Medical Sciences of the National Research Council, and the service may be made available only to those physicians and hospitals that enter into an agreement to carry out the prescribed methods and technic.

Final responsibility for the administration of the cells is assumed according to the signed agreement provided and is not transferable back to the American Red Cross Blood Donor Service to the Army, to the Navy or to the plasma processing laboratory.

The methods and technic prescribed for the preparation, storage and administration of the red blood cell suspensions are as follows:

1. The blood is withdrawn at the Red Cross center, according to the usual procedure.

2. The technician typing the blood receives the full bottle of blood properly tagged and accompanied by a donor record card and serology tube.

3. The name and number on the card, tube and bottle are crosschecked for transcription errors.

4. The original typing of the blood is done from the serology tube with two different lots of anti A and anti B typing serums of known high potency and the results are determined and recorded by two different technicians. Only type O bloods will be selected.

5. A yellow tag is attached to the bottle and the following information entered on the tag: (a) date of bleeding, (b) donor's serial number, (c) type, (d) expiration date.

6. A separate list giving the serial number and name for each bottle selected is made out and included with the bloods, which are shipped to the processing laboratory in a separate refrigerated container.

7. At the laboratory, the procedure is as follows:

(*a*) Serology tests are done and only bloods reported as negative are used.

(*b*) The bottle of cells is to be appraised for (1) plasma cell ratio (only full bleedings are utilized), (2) lipemia, (3) hemolysis, (4) mechanical defects, (5) breaks in technic, (6) presence of large clots. Bottles showing such defects are discarded.

(*c*) After centrifugation and withdrawal of the plasma, a sterile solid stopper is placed in the bottle.

The original white tag must not be removed from the bottle at the laboratory.

(*d*) Resuspension of the cells (either in the processing laboratory or in the outside laboratory; the procedure is the same in the 2 cases). Resuspension of the cells must be done in a dustproof room with a filling buret and a second sterile solid rubber stopper inserted. Known pyrogen free isotonic solution of sodium chloride (or other solution approved by the National Research Council) is used as the diluent, and is added as soon as possible after centrifugation of the blood.

(*e*) Resuspended cells are returned in refrigerated containers to the blood donor center and the tags on the bottles checked with the list originally prepared. No pilot tubes are returned with the bottles.

(*f*) Bottles of resuspended cells are stored at 4 to 10 C. until distributed. Before distribution the cells are to be appraised for hemolysis and possible color change.

8. *Sterility.*—The dispensing laboratory or station must ascertain the sterility of all procedures at the outset and at regular intervals check the maintenance of this sterility. Sterility tests are to be done as follows:

(*a*) Five cc. of the cell suspension is placed in each of two tubes containing 20 cc. of a good nutrient broth containing dextrose.

(*b*) The tubes are incubated at 37 C. for fourteen days.

Fifty negative cultures are to be obtained at the outset and before any cell suspensions are distributed. Thereafter every fifth bottle is tested until three hundred negative cultures are obtained. As a routine procedure, one bottle is tested at random for each day of operation thereafter.

The appearance of contaminated bottles demands a thorough investigation of the causative factors and a cessation of activities until an adequate explanation is obtained. The procedure as indicated for sterility testing must be carried out before the cells are again released for distribution.

9. *Administration of the Cells.*—(*a*) All resuspended cells must be stored at 4 to 10 C. after distribution to the hospitals. Care must be taken not to let the temperature fall below the 4 degree level. If there is any question that freezing has occurred, the bottle of cells must be discarded.

(*b*) Cells must be used within five days of the date of bleeding.

(*c*) The cells are not to be removed from the original container until just before use.

(*d*) Resuspended cells should be observed at intervals for the appearance of hemolysis or any change in color of the supernatant fluid. If a violaceous or blackish red color appears, if there is any question as to the condition of the material or if any unusual odor is apparent, the cells must be discarded.

(*e*) The cells must be retyped and cross matched at the hospital immediately before use. A sterile pipet is to be inserted in the bottle and a specimen removed for this purpose. The cells must be given within five hours of the time the bottle has been entered.

(*f*) The cells are not to be dispensed directly from the original container. Immediately prior to administration they must be poured from the original bottle into the dispensing flask in order that gross clots or unusual odors may be detected.

(*g*) The cells must be filtered through four layers of 44 by 40 bandage roll gauze or used with a 100 mesh stainless steel filter placed in the administration set.

(*h*) The cells must not be warmed before use.

(*i*) If the entire contents of the bottle are not used, the remainder is to be discarded.

(*j*) The bottles in which the cells were contained must be returned to the Blood Donor Center from which they were distributed.

(*k*) The cells are not to be given to antepartum or postpartum patients unless there has been full appraisal of the Rh factor.

10. A report form for each bottle of cells is to be completed and returned to the technical supervisor of the American Red Cross Blood Donor Center dispensing the cells. The service will be discontinued if these reports are not properly executed and forwarded within a reasonable length of time.

As experience is accumulated, it is hoped that with the use of preservative solutions the service may be extended and the red cell suspensions transported over a considerable area with a longer dating. Combination of these red cells with other types of blood substitutes, such as gelatin solution, offer investigative possibilities.

SUMMARY

1. On the basis of pilot work with ten thousand [14] red cell transfusions, it appears that this by-product of the plasma program for the armed services is suitable for transfusion use as a substitute, at least in part, for whole blood.

2. A Red Cell Transfusion Service is being extended from the two pilot blood donor centers to those centers which are proximate to the plasma processing plants. This service is conducted by the Blood Donor Service of the American Red Cross.

3. The service will be available first to Army and Navy hospitals and secondly to accredited civilian hospitals, without cost, for clinical investigation.

4. General rules as to the organization of the technical aspect of the service have been laid down.

5. Investigation is under way to extend the possible use of these red cell transfusions and further ascertain their value.

Detroit Blood Donor Center.

14. Since this article was submitted for publication, the total number of red cell transfusions given has increased to eighteen thousand.

USE OF SALVAGED RED CELLS

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AND
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When the American Red Cross Blood Donor Service opened its Detroit unit in November 1941 it was at once our desire to make use of red cell residues that were discarded after the plasma had been drawn off. However, it was not until July 1942, when Parke Davis & Company began to process plasma from the Detroit Blood Donor Center, that the opportunity presented itself. As there were no reports available on the use of cells which had been subjected to high speed centrifugation and few reports available as to the proper fluid for resuspending such cells, various studies were undertaken before these resuspended cells were used clinically. After the essential laboratory studies had been completed and nearly two hundred bottles of cells were administered to selected patients, approval was given by the National American Red Cross Blood Donor Service and the Surgeon General's Office of the Army to extend this program. On Jan. 1, 1943 the Detroit Red Cross Blood Donor Service began to deliver cells to fourteen nearby hospitals that agreed to carry out certain necessary regulations in the storage and administration of the cells. To date, 7,864 bottles of cells suspended in isotonic solution of sodium chloride (0.85 per cent) adjusted to a p_H of 7.2 have been furnished these hospitals, and a follow-up study on 4,050 such cell transfusions has been completed.

From the beginning, the problem of sterility has been given serious consideration. We have cultured numerous bottles of blood and of resuspended cells without finding any contaminations. It did not seem feasible to continue to culture each bottle of cells in such a large program as this, since our laboratory studies and accumulated experience indicated that stored blood cells must be used in a relatively short time after the blood is obtained from the donor. It was found that, unless special diluents other than saline solution alone were used, the cells which were returned to us after high speed centrifugation could not be held for more than five or six days from the date of bleeding without showing considerable hemolysis or definite alteration in the fragility index of the cells.

When red cell suspensions were deliberately contaminated for the purpose of investigation, it was found that, occasionally within twenty-four hours of storage at 4 to 6 C., and almost always after forty-eight hours of such storage, the contaminated cells turned a dark red and the supernatant diluent showed a purplish red discoloration that was at once distinguishable from unaltered cell suspensions. Since the method of distribution which we proposed rendered impossible the use of these cells before forty-eight hours from the time of bleeding, it was decided that this gross macroscopic test could be used in lieu of actually culturing each bottle of cells. As the cells were diluted back to their original volume with isotonic solution of sodium chloride there was ample supernatant diluent for a careful inspection.

From the Detroit Red Cross Blood Donor Center.

After resuspension, the cells were retained in their original bottles and were not opened until the final typing and cross matching tests were done at the hospital just before administration. The technicians in charge of the blood banks using these cells were instructed to discard any bottle showing abnormal coloration as well as bottles not used by the fifth day from the date of bleeding.

As has been shown by Mollison and Young [1] and by Denstedt,[2] the development of hemolysis in stored blood in vitro does not parallel the fate of stored blood that has been transfused. Consequently, before these red cell suspensions were released on a large scale, numerous patients were studied to determine the occurrence of hemolysis in vivo by estimating the icterus index on the recipient's blood before and for several days after transfusion of the cells. In addition, urinalyses were made for several days after cell transfusion to determine the presence of hemoglobin or any of its end products. In the 200 transfusions so studied there was only 1 case in which the icterus index was increased and in which abnormal hemoglobin products not present before the transfusion were found in the urine. In this instance 5 liters of suspended cells was given an Rh positive patient with an extremely grave anemia of pregnancy. She was subsequently given stored whole blood, which produced an identical reaction. This could not be explained on the basis of the age or condition of the cells. In this patient the hemolytic process subsided at the sixth month of pregnancy, and she was carried to term. It was the opinion of the hematologist that this patient had an unusual hemolytic anemia of pregnancy. In the follow-up study of 4,050 bottles of suspended cells furnished Detroit hospitals, no other instance of a hemolytic reaction was reported.

Previous reports on the use of red cells dealt with undiluted or packed cells,[3] but this method has certain disadvantages. In the first place, as Watson pointed out, pressure may be required to administer packed cells through the standard 18 gage needle. With the additional volume provided by the diluent in resuspended cells, the gravity method of administration is preferable both for its simplicity and for its safety. Furthermore, packed cells, when resuspended in saline solution at the end of five days' storage, show greater hemolysis and are more fragile than cells resuspended in saline solution immediately after withdrawal of the plasma. As already mentioned in the discussion of sterility problems, it has been our experience that the appearance of an ample supernatant liquid above the cells is a most useful aid in indicating that a deleterious change has taken place in the cells. We do not believe that the extra volume of the saline diluent is important.

As shown by chart 1, salvaged cells which have been subjected to high speed centrifugation reacted differently when resuspended in the various standard intravenous solutions ordinarily considered as isotonic

1. Mollison, P. L., and Young, I. M.: Failure of In Vitro Tests as a Guide to the Value of Stored Blood, Brit. M. J. **2**: 797 (Dec. 6) 1941.

2. Denstedt, O. F.; Osborne, D. E.; Stansfield, H., and Rochlin, I.: Survival of Preserved Erythrocytes After Transfusion, Canad. M. A. J. **48**: 477 (June) 1943.

3. MacQuaide, D. H. G., and Mollison, P. L.: Treatment of Anemia by Transfusion of Concentrated Suspensions of Red Cells, Brit. M. J. **2**: 555 (Oct. 26) 1940. Williams, G. E. O., and Davie, T. B.: Preparation and Use of Concentrated Red Cell Suspensions in Treatment of Anemia, ibid. **2**: 641 (Nov. 8) 1941. Watson, L.: Red Cell Suspension Transfusions, Lancet **1**: 107 (Jan. 23) 1943. Evans, R. S.: The Use of Concentrated Red Cells as a Substitute for Whole Blood, J. A. M. A. **122**: 793 (July 17) 1943. Alt, H. L.: Red Cell Transfusions in the Treatment of Anemia, J. A. M. A. **122**: 417 (June 12) 1943.

to human blood. Five per cent dextrose in distilled water produced a complete hemolysis of these cells in a very short time. Five per cent dextrose in saline solution frequently produced complete hemolysis. Two per cent dextrose and 2 per cent and 5 per cent sucrose produced the same changes as 5 per cent dextrose. Alsever's solution, containing 0.80 per cent sodium citrate, 2.05 per cent dextrose and 0.42 per cent saline solution gave as good results as Denstedt's solution, containing 1.7 per cent citrate and 2.3 per cent dextrose. These special mixtures were far superior to saline solutions in preserving the cells for a longer period of time, as indicated by in vitro studies (chart 1).

In the table the studies of cell fragility with these various solutions are shown. It is seen that saline diluted cells stood up very well until the fifth day, when the fragility index increased very rapidly. While the Alsever and Denstetdt suspended preparations started with a slightly higher fragility index, this index remained at a constant level until the tenth or the fourteenth day. Mollison and Young [1] and Denstedt [2] have shown that the fragility index does not always parallel the life in vivo of these transfused human red cells. Nevertheless these fragility studies have aided

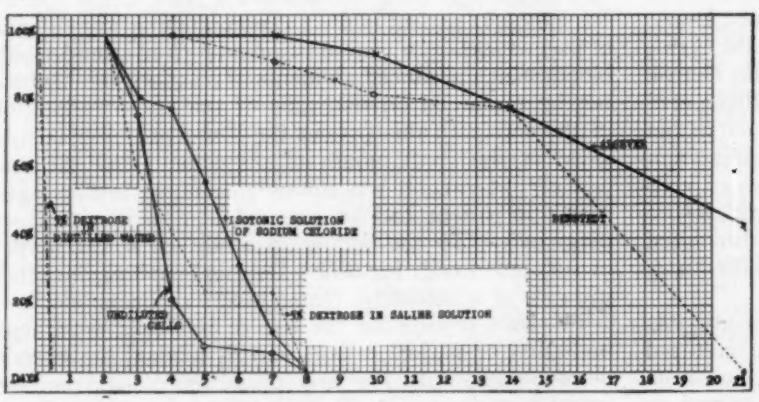

Chart 1.—Effect of various diluting solutions on hemolysis. Number of bottles (shown in percentages) which had supernatant fluid either "clear" or showing only a "trace" of hemolysis, by days from day of bleeding. All bottles had plasma withdrawn within twenty-four hours, and packed red cells were diluted within three or four hours after withdrawal of plasma. In the case of "undiluted" cells, hemolysis was tested by diluting with isotonic solution of sodium chloride, only on the day of testing. Each point on the graph represents observations on at least twelve bottles.

us in evaluating the various diluting solutions. We are now in the process of making studies of cell survival in vivo by the method of Ashby,[4] comparing saline diluted and Alsever diluted cells, and cells stored for various lengths of time.

When the amount of diluent added to packed cells was varied, so that its volume was one fourth of, one half of or equal to the volume of cells, there was little apparent difference between the various preparations as measured by hemolysis and fragility studies. We have on several occasions pooled two or three bottles of both diluted and undiluted cells of similar type and given them as one injection. We still prefer, however, to administer 500 cc. of saline suspended cells twice daily or three times daily when large amounts of blood are required. By this method ample blood can be administered quickly and the standard apparatus available in the various hospitals can be used with little change.

Effect of Various Diluting Solutions on Red Cell Fragility

Figures represent point of beginning hemolysis (in percentage of sodium chloride); each figure is an average of at least twelve tests.

Days	1	3	5	7	10	14	21
Saline solution diluted	0.46	0.49	0.59	0.67	0.72	....	....
Undiluted cells	0.48	0.52	0.68	0.71	0.76	....	....
5% dextrose in saline solution	0.52	0.56	0.63	0.72	0.76	....	....
Alsever solution	0.54	0.56	0.57	0.58	0.62	....	0.74
Denstedt solution	0.56	0.56	0.57	0.58	....	0.58	0.74

The number of reactions from red cell suspensions has been reported by other workers to be less than that of whole stored blood.[5] In one hospital 413 separate resuspended cell transfusions were studied in 139 patients. Only a definite rigor followed by a rise of temperature was considered a reaction. In the 413 cell transfusions studied there were 9 definite reactions, a percentage of 2.1. These patients were also given whole bank blood at one time or another. When 342 bottles of stored whole blood were given to these same 139 patients, 12 reactions occurred, a percentage of 3.5. This would seem to suggest that there may well be a slightly lower percentage of reactions following saline suspended red cell transfusions than when stored whole blood is used. In another series of 629 saline suspended cell transfusions studied in three other Detroit hospitals, reactions occurred in 3.0 per cent of the cases.

The red cell count and hemoglobin increase in 500 cc. of cell suspension administered was studied. A hemoglobin determination made by the Haden-Hauser method (16 Gm. of hemoglobin = 102 per cent) and a red cell count were taken approximately two hours before the cells were administered, and another hemoglobin and red cell determination was made twenty-four hours after the 500 cc. of cells was administered. These figures were averaged in 67 different cell transfusions given to 25 patients. The average hemoglobin rise from a transfusion of 500 cc. of suspended cells was 0.56 Gm. (3.75 per cent) and the average red cell rise was 206,700 cells. In the series of 629 saline suspended cell transfusions the hemoglobin rise varied from 0.46 Gm. in malignancy to 1.3 Gm. in obstetric cases to 500 cc. of cells administered. The red cells increase per bottle of cells administered varied from 123,157 in malignancy to 497,000 in obstetric cases.

As to the clinical improvement noted following cell transfusions, we can state that the results seem in every way similar to those from whole blood transfusions. Cell transfusions were not used in patients with significant hypoproteinemia, although, in a number of cases of debilitating illness with slight reduction in serum protein values, cell transfusions were used for economic reasons. The most significant and at times astonishing results from cell transfusions were seen in patiehts with severe anemia who were given 1,000 to 1,500 cc. of cells daily for two or three days. Several of these previously bedridden patients were able to walk around the ward after having received 2 or 3 liters of suspended cells in a period of two or three days.

We believe that much too often blood transfusions are given in quantities measured solely by the number of donors available, and not according to the need of patients for blood. When the storage areas in the

4. Ashby, W.: The Determination of the Length of Life of Transfused Blood Corpuscles in Man, J. Exper. Med. **29**: 267 (March) 1919.

5. Murray, C. K.; Hale, D. E., and Shaar, C. M.: Red Blood Cell Suspensions in Treatment of Anemia, J. A. M. A. **122**: 1065 (Aug. 14) 1943. MacQuaide and Mollison.[3] Williams and Davie.[3]

body are depleted of red blood cells, it may take several transfusions to fill these depots and be reflected in a proper rise in circulating red blood cells. With an unlimited supply of salvaged red blood cells available, it should always be possible to prescribe the amount of blood or cells really needed by the patient. Furthermore, recent studies have suggested that adequate amounts of blood given in a short period of time have a more beneficial and sparing effect on the bone marrow than the same total amount of blood when given over a period of several weeks.[6]

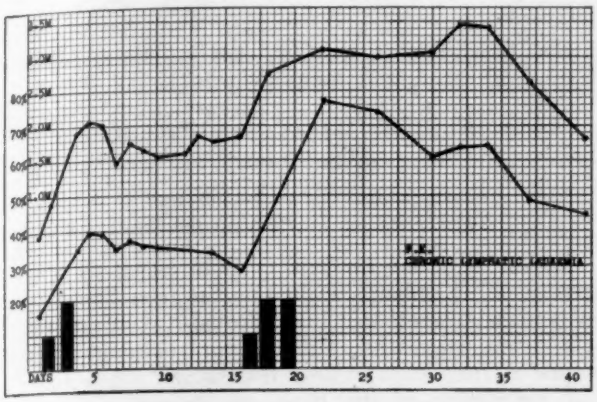

Chart 2.—Effect of red cell transfusions in a case of lymphatic leukemia. Upper line, red cell count; lower line, hemoglobin percentage.

As has already been mentioned, red cell suspensions have not been used when pronounced hypoproteinemia is present. However, following acute blood loss of all kinds, in the later stages of burns and in numerous cases of debilitating illness, such as malignant conditions, tuberculosis, blood dyscrasias and severe chronic infection, red cell suspensions have proved of value. As would be expected, the number of reactions to cell transfusions in cases of blood dyscrasias, severe sepsis and malignant conditions is slightly higher and the hemoglobin and red cell count rise is slightly less than in patients with a simple acute or chronic blood loss.

In chart 2 is shown the hemoglobin (lower line) and red cell graph (upper line) of a patient with chronic leukemia with almost complete aplasia of the bone marrow. There were few platelets; the patient was bleeding from the gums and rectum and was orthopneic and unable to walk. His hemoglobin was too low to read accurately. Fifteen hundred cc. of suspended cells were given within eighteen hours, after which his bleeding ceased and he was able to walk about the ward freely. Several days later 2 more liters of suspended cells was given and he was discharged from the hospital. The very slow fall of his hemoglobin and red cell count over a period of twenty-six days without further transfusion is shown as an example of the prolonged beneficial effect of transfused cells under adverse conditions. In chart 3 is shown the graph of a patient aged 69 in a severe relapse from pernicious anemia who entered the hospital desperately ill with a lobar pneumonia of undetermined type. Two liters of suspended cells was given in thirty-six hours, together with sulfadiazine orally. Her blood picture was immediately restored to almost normal levels and was held there by the administration of liver extract. She made an uneventful recovery.

In the beginning of this work type specific cells were used, but as the project has expanded it was decided to use only type O cells. In this way there is much less wastage of resuspended cells, and transcription errors are less likely to occur than when all types of cells are used.

The plan we are now using in the distribution of red cells at Detroit is as follows: On designated days a sufficient amount of blood is typed at the donor center to supply the number of bottles of O cells requested by the hospitals. This typing is done by two different technicians using two different preparations of high titer test serum and is done from the serology tubes only. The bottles of O blood thus obtained are individually and clearly designated with a special yellow tag. At the processing plant the routine procedure, including serology testing, is followed up to the point where the plasma is removed. As the bottles of O blood are collected in the plasma-removing room they are inspected for plasma cell ratio and color. After the plasma has been withdrawn, the cells are resuspended to their original volume in isotonic solution of sodium chloride. A sterile solid rubber stopper is inserted. The O cells thus prepared are delivered to the donor center on the day following their withdrawal from the donors. Each bottle still retains its original dated donor tag, as well as the special yellow O type tag. The red cell suspensions are transported in the portable refrigerators used by the Red Cross Blood Donor Service and on arrival from the laboratory are placed in our blood bank refrigerator. The following morning the bottles of cells are carefully removed and inspected for changes in color of both the supernatant liquid and cells as well as for mechanical defects. The bottles which pass inspection are then placed in special cardboard containers, and delivery is made to the participating hospitals. Most hospitals prefer delivery on Tuesdays, Thursdays and Saturdays, so that fresh cells are always available. For the small hospital, which may be only an occasional user, a few bottles are held at the donor center to be delivered as requested.

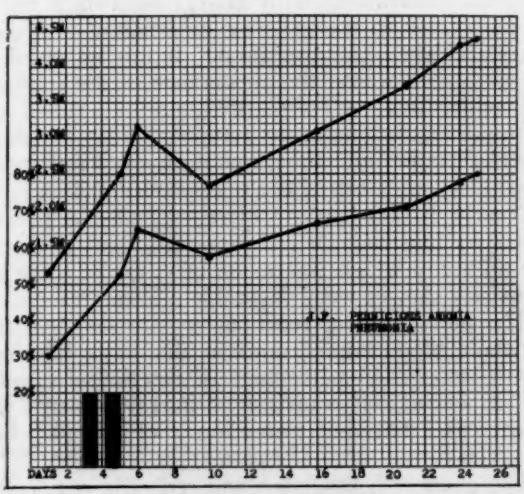

Chart 3.—Effect of red cell transfusions in a case of pernicious anemia with pneumonia. Upper line, red cell count; lower line, hemoglobin percentage.

The red cells used by the participating hospitals are furnished by the American Red Cross Blood Donor Service without charge, and no charge is made to any patient by the hospital except for the laboratory services of retyping and cross matching and for the use of administering equipment. The hospital assumes the full responsibility for the use of this

6. Doan, C. A.: Personal communication to the authors.

material. The laboratory technician in charge of receiving the cells from the Blood Donor Center is required to retype the cells and to cross match them with the recipient's blood. For this purpose suspended cells are obtained with a sterile pipet directly from the bottle just before administration. The technicians in all the participating hospitals are given mimeographed sheets of instructions as to the requirements of inspection for changes in color, and of adequate filtration, and as to the routine care of such stored blood. The cells must be filtered immediately before use through four layers of bandage gauze or must be given through a 100-200 mesh standard stainless steel blood filter placed in the administration set. Technicians are instructed to discard any bottle of cells which does not meet every specification. A simple report form is required to be filled out for each bottle of blood and returned to the Blood Donor Center.

A wartime program has provided this unusual opportunity to salvage the red cells remaining after withdrawal of the plasma from the blood that has been donated to the Army and Navy. It is probable that, with the extensive processing facilities now in existence for dried plasma and serum albumin and with a growiing demand for such products, a continuation of this red cell salvage program may be possible, either through commercial plants or through community organizations.

SUMMARY

1. The cell residue obtained after centrifugation and removal of the plasma from serologically negative citrated blood collected at the American Red Cross Blood Donor Center in Detroit has been made available for use in the form of resuspended cell transfusions.

2. Isotonic, pyrogen free, sterile saline solution proved more satisfactory than a number of other solutions for preserving the centrifuged cells up to five days.

3. Careful aseptic technic preserved the sterility of the cells, as shown by controlled cultures at the beginning of the work and by the cultures of random samples at intervals thereafter. Any change to a dark red or violaceous color in the cells or supernatant fluid may indicate accidental contamination. If this occurred, or if for any other reason the appearance of the cells was questionable, they were discarded.

4. Rigid regulations as to retyping, cross matching, adequate filtration and time limitation were set up and adhered to by all users of the resuspended cells.

5. Nearly 10,000 bottles [7] of resuspended cells were supplied to fourteen Detroit hospitals, and a careful follow-up study which was made of 4,050 of these cell transfusions showed very favorable clinical results.

6. The percentage of reactions was lower than that from whole blood transfusions in the same hospitals. The post-transfusion percentage of reactions from 413 saline suspended cell transfusions in 139 patients was 2.1, whereas from 342 transfusions of stored whole blood given to the same 139 patients it was 3.5.

7. The average hemoglobin and red cells rise in 500 cc. transfusion of suspended cells in 67 cases was 0.56 Gm. and 206,700 cells per cubic millimeter respectively.

8. Striking clinical improvement was noted in several severely anemic patients to whom a liter or more of suspended cells was given daily for several days.

9. Both type specific and type O cells were used at first, but later only type O cells were distributed. The use of type O resuspended cells is recommended to minimize transcription errors and to eliminate as far as possible any incompatibility reactions.

10. As in wartime, peacetime salvage of human blood cells would seem to be a logical sequel to the development of a plasma program.

7. Since this paper was submitted for publication the number of transfusions given has increased to fifteen thousand.

RESUSCITATION OF THE DROWNED TODAY

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HULL, ENGLAND

In Seven Seas the victims drown;
Their cries for help imagination hears.

A year ago our implicit faith in Schafer's almost sacrosanct method was shaken by Surgeon Commander Gibbens, who wrote that in the Royal Navy this method was rarely successful, although practiced by trained hands. The victim's chest felt to him "like putty," and ventilation of the lungs could not be effected. Doubtless this lack of response in bad drowning cases is due to lack of muscular tone, and this in turn is due to asphyxia of the nerve cells, situated between brain and spinal cord, which maintain tone and respiration. Now the main respirating agent is a thin sheet of muscle (the diaphragm) at the base of the lungs. In health this is pulled up into a dome by the elastic contraction of the lungs. When the diaphragm contracts, its dome is lowered and air is pulled into the chest. But when the diaphragm loses its tone progressively, as in drowning, it is pulled up by the elastic lungs into a position of extreme expiration. Schafer's method would then be useless, especially as it depends entirely on the elastic tone of muscles (no longer present) for inspiration when the pressure of the hands is taken off the patient's back. Schafer naturally assumed in 1908 that his method, which works well in normal conscious persons, would also work in the almost drowned, but this unfortunately is not true. What then are we to do about it?

In the first place we must not be hoodwinked by figures for the ventilation of the lungs derived from artificial respiration of conscious subjects. The only reliable imitations of a nearly drowned person are the newly dead cadaver and perhaps the deeply anesthetized person whose lungs have been overventilated to wash out carbon dioxide. In ventilation tests on the warm cadaver, Schafer's method yields only about 30 cc. (totally inadequate) and Silvester's method—of changing the size of the chest by extending the arms and then compressing the chest with them—yields 200 cc., which is probably just adequate. Two normal men anesthetized and their carbon dioxide washed out gave ventilations of 660 cc. for the Schafer method and 930 cc. for the Silvester method. Hence, of these two older methods which do not require apparatus, I would certainly start off with Silvester's method in a bad or pulseless case of drowning, though Schafer's method will probably succeed in milder cases. Silvester's face-upward method has the drawback that the flaccid tongue is liable to fall back and obstruct the airway, so that a second rescuer is needed to pull forward the tongue (or lax lower jaw). Schafer's technic is free from this objection, and mucus or water drains away better from the mouth in the prone position. Schafer's method is much improved if a

second operator (at the head end) lifts the extended elbows (and hence the chest) off the ground during inspiration (figs. 2 and 3). I read that this Nielsen modification had been adopted by the New York Emergency Service.

RESUSCITATION WITH BREATHING MACHINES

I can pass over the "iron lung," which is needed only in prolonged hospital cases of failure of respiration such as paralysis of the diaphragm by infantile paralysis or diphtheria. With the American partiality to machinery, there has been a remarkable vogue for various "suck and blow" machines for the drowned and in similar cases. In England they have not been favored. Professor Yandell Henderson strongly condemns them, but he still (in a recent letter) thinks

Fig. 1.—Rocking on a trestle. (Copyright by Surgeon Commander G. H. Gibbens, R. N. V. R., Fairlawn, Sidmouth, Devon, England.)

Schafer's method adequate if aided by oxygen containing 6 to 10 per cent of carbon dioxide (seldom available for the drowned).

THE ROCKING METHOD

In 1932 I was called to a girl aged 2 years, propped up in bed, deathly pale and rapidly dying of the "death rattle" (mucus surging to and fro in the windpipe). I noticed that the diaphragm was not working, and inquiry elicited that the child had diphtheria six weeks previously but had been well till her breathing went wrong a few hours before my visit. In cases of "death rattle" I always tilt the patient so that the windpipe slopes downhill and the mucus drains into the throat, from which it can be swabbed. This tilt cured the death rattle in a few minutes, but I reflected that it would compress the lungs and thus conduce to pneumonia if continuous. I asked if they had a rocking chair in the house so that the head-up and head-down posture could be alternated. Most fortunately they had a long rocking chair, to which a platform of folded blankets was added and the child tied on. Why not now alternate the tilt a dozen times a minute, so that the weight of the abdominal contents could push and

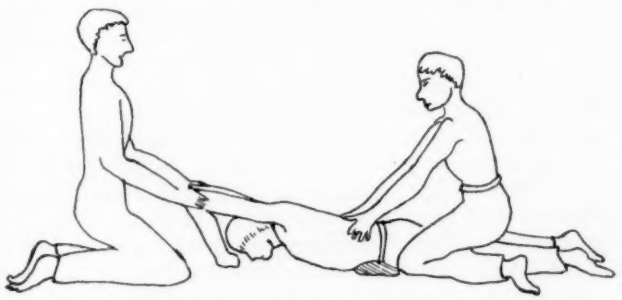

Fig. 2.—Schafer-Nielsen method of resuscitation, inspiratory phase.

pull the diaphragm up and down like a piston? This was done continuously by the devoted parents, completely relieving the child's breathing till the diaphragm paralysis passed off after two and a half days. She is still alive and healthy. In this interesting way I stumbled on a new method of resuscitation by rocking. With the expert aid of Dr. Esther M. Killick it was found (in the Leeds physiology laboratory) to be efficient, and at ten double rocks a minute with a tilt of 50 degrees to ventilate 600 cc. per rock (normal 500 cc.). This is ample ventilation: more would introduce the possible subtle dangers of acapnia (too little carbon dioxide in the blood).

ROCKING METHOD ADOPTED BY ROYAL NAVY

Faced by the failures of Schafer's method, Surgeon Commander Gibbens turned with relief to my rocking method, which worked by gravity and was independent of muscular tone. He adapted it to ships by fixing, under the middle of an ordinary stretcher, a pair of grooved wooden blocks to prevent slipping. On these it could be rocked 45 degrees each way, either on a trestle 34 inches high or on a loop of rope slung from the hammock hooks (fig. 1). The method has now (1943) been adopted preferentially in the navy and is fully described and illustrated in "First Aid in the Royal Navy," published at 2 shillings. Schafer's

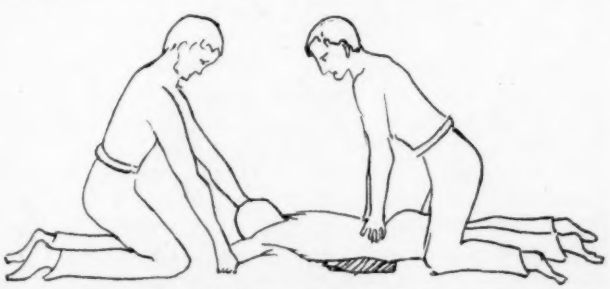

Fig. 3.—Schafer-Nielsen method, expiratory phase.

method is used promptly and till rocking can actually begin. The patient is laid face downward and the ankles and wrists are lashed to the handles of the stretcher. The first head-down tilt of 45 degrees is maintained till no more water drains from stomach or lungs. After a few minutes a tilt of 30 degrees each way (ten times a minute) will be enough to ventilate the lungs. The advantages are that untrained operators

can work it instead of the relays of skilled operators needed by manual methods. It cannot injure ribs or viscera and is independent of muscular tone in blood vessels or diaphragm, in which respect unfortunately Schafer's method fails. Wet clothes can be removed during rocking and warmth applied.

In spite of many efforts I have not been able to get this method tested on the warm cadaver. But Dr. Macintosh, Nuffield professor of anesthetics at Oxford, has tried it out (1943) under deep anesthesia (in apnea) on Squadron Leader Pask, who was an anesthetist and realized that tests on conscious persons were useless. He nobly volunteered to be tested with proper recording instruments with ten double rocks per minute. The yields were Schafer 340 cc., Silvester 400 cc. and Eve 580 cc., with a tilt of 45 degrees each way. This experiment is considered to imitate the condition of a drowned man, but I doubt that tone in the diaphragm is completely lost.

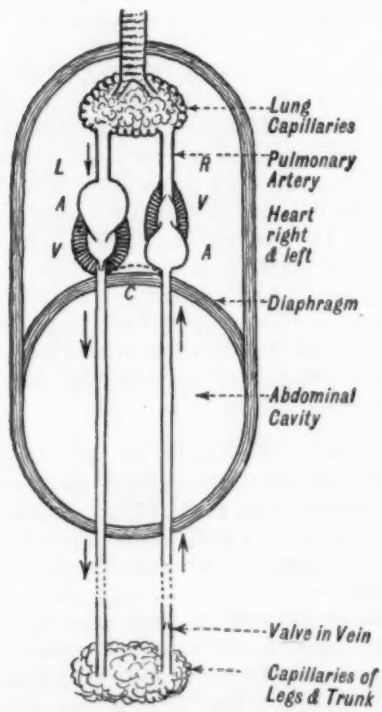

Fig. 4.—Diagrammatic representation of the circulation.

RESUSCITATION IN A BOAT

If an almost drowned person is picked out of the sea into a boat he will, if nothing is done, be dead before the shore or ship is reached. Crowding or deep thwarts may prevent Schafer's method being cardied out. Hence I tried lying prone on the four flexed forearms of two men standing up facing each other in a ship's lifeboat and gripping each other's hands, or, better, a rope quoit or ring bandage. My axillas and groins were thus supported while the legs, arms and head hung limply. By swaying from their hips the two men rocked my 10 stone (63.5 Kg.) a dozen times a minute through about 40 degrees each way. Ventilation seemed adequate, for I did not need to breathe. They thought they could easily keep it up for a quarter of an hour or more. My modified Silvester method seems better still (not yet published). These manual methods have not been tried out but would be a long way better than nothing. Ashore a two-wheel builder's hand cart would serve for rocking, the victim's legs being lashed to the (abbreviated) pole handle. It could also carry blankets, macintoshes and life buoy to organized bathing places.

THE THREE ESSENTIALS OF RESUSCITATION

The term artificial respiration seems dangerously misleading because it focuses attention on ventilating the lungs. I submit that resuscitation is actually a trinity of ventilation, circulation and warmth directed to supplying warm blood, oxygenated by moving lungs, to the microscopic nerve cells which maintain respiration and tone. These are situated where brain and spinal cord unite and can (I found) be paralyzed by cold and quickly revived by warmth. To illustrate what happens, Dr. H. W. Haggard was at hand to do artificial respiration when a man had a sudden fatal heart attack. He found he could ventilate the lungs normally at first, but after ten to fifteen minutes this became impossible. The nerve cells which maintain tone of the diaphragm had died of asphyxia and the elasticity of the lungs had drawn up the flaccid diaphragm into full expiration. Similarly in the apparently drowned, if too long unsuccored, the nerve cells will die of asphyxia, and then all hope is gone. Till then they may be revived by artificial respiration, seldom successful after trying for an hour, though rarely up to eight hours. The heart dies more slowly than the nerve cells, for after drowning the human heart has been revived by perfusing oxygenated saline solution, a baby's heart after several hours.

RESTORATION OF CIRCULATION

Probably in the future the merits of rival methods of resuscitation will be judged more by their effects on the circulation than on ventilation, which is so much easier to produce and to measure. For air in the lungs is useless unless the oxygenated blood is conveyed to the dying nerve cells. Up till now the effects of artificial respiration on the circulation have been crudely guessed from the alterations it produces in the pressures inside the heart of the newly dead man. Silvester's method, which opens up the ribs and then presses them tightly shut again, produces a pressure change of 26 cm. (of water) inside the dead heart: the Schafer method yields only 4 cm., increased to 22 cm. by the Nielsen modification. (The corresponding figures for ventilation are 280, 20 and 210 cc.) These (larger) pressure changes should help to restart the heart. It may be argued that Schafer's method should help by squeezing blood into the heart from the great veins in the abdomen. But it has been found (1939) in the Banting Institute, Toronto, that in drowned dogs (after artificial respiration and death) the venous side of the heart is overfull and the arterial side too empty. Bleeding was useless: amyl nitrite and carbon dioxide-oxygen mixture were helpful. Thus the apparent gain by the Schafer method seems likely to prove a disadvantage. The problem seems to be how to get the blood past the collapsed lungs and right side of the heart.

THE ROCKING METHOD AND THE CIRCULATION

To clear my own ideas I have found the diagram (shown in figure 4) most helpful and instructive. Since gravity in rocking affects only the longitudinal blood vessels, they can be represented as straight tubes: the arms and head (for clarity) can be omitted as they counterpart the legs and trunk: the tangled confusion of the heart can be simplified into two rubber syringes. Observe the one-way valves in the veins and heart, and particularly the broken line *C*. This indicates the coronary artery which carries oxygenated blood from the main artery through the actual muscles of the heart and so to join the blood flowing back into the lungs. If now we tilt the diagram (or the patient whose heart has stopped or nearly so) into the head-down tilt we see that the pressure of about 4 feet of blood in the arteries will slam shut the main (aortic) heart valve and have no option but to travel through the oxygen starved heart muscle. This should be invaluable in starting a stopped heart or restoring

a feeble one. Similarly the nerve cells of the brain and breathing center will receive blood rhythmically at a hydrostatic pressure which I calculate will be fully normal. The veins of the extended arms will acquire a reservoir of blood ready to fill the heart again when the legs are tilted down. Every drowning person is shocked, and in shock the venous side of the heart is said to be always starved of blood. In that case the head-down tilt will fill it and encourage it to beat and pump. That is why in shock we raise the foot of the bed: an empty heart pump evidently cannot work.

Now tilt the diagram (or patient) feet down. Blood falls from the lungs past the open valves of the left side of the heart into the arteries of the trunk and legs. Hence, in rocking, gravity propels the blood alternately in arteries and veins in the direction of the arrows; reflux is prevented by valves in the veins and heart. My faith that this will happen is confirmed by Sir Leonard Hill, the English physiologist, whose experiments (he writes me) showed that blood flow to the brain can be kept going by head-up and head-down positions alternated. For this and other reasons he considers my rocking method the best way of doing artificial respiration.

WARMTH

In victims of drowning the production of heat is minimal and the loss of heat maximal, especially from evaporation in a wind. Heat loss is visible only to the eye of the imagination and hence is often forgotten. Remembering that the revival of chilled nerve cells is our goal, I suggest hot bottles saddle bagged over the neck, or an electric shock cradle tied to the head end of the rocking stretcher. I read that a rigid corpselike fakir was quickly brought to life, after being for ten days actually buried alive, simply by pouring hot water abundantly, chiefly over the head, neck and heart.

This seems worth trving for the drowned, who are already wet. Carbon dioxide is greatly used in resuscitation, as (normally) it is a splendid stimulant of the respiratory nerve cells when mixed 5 per cent with oxygen and inhaled. Yet Professor Macintosh tells me that he and several American anesthetists have recently abandoned its use because it is a dangerous depressant to the nerve cells of those at the point of death.

CONCLUSIONS

Resuscitation of the drowned is not merely working the bellows of the lungs but a fight to revive cold asphyxiated nerve cells by a circulation of warm blood oxygenated by moving lungs. Our old comfortable confidence in Schafer's method has been roughly shaken: Silvester's method is in many ways better, and the recent rocking method seems more promising still. Uncomplacently we must all "go to school" again. More experiments are badly needed: resuscitation is in the melting pot.

81 Beverley Road.

Estimating the Standing and Capability of a Man of Science.—There is only one sound criterion for estimating the standing and capability of a man of science, and that is the evaluation of the way in which he is regarded by his colleagues in his profession. If there were only one way of doing this, perhaps it might not suffice, but there are many. Membership in scientific societies of standing is important, wherever such membership is dependent on evaluation and election. Recognition by learned bodies is a guide.—Bush, Vannevar: The Kilgore Bill, *Science*, Dec. 31, 1943, p. 571.

CONCENTRATION RADIOTHERAPY OF CANCER OF THE LARYNX

A STUDY OF 413 CASES

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This is a report of 413 consecutive cases of cancer of the larynx observed by me between January 1931 and January 1943. The main purpose is to discuss the advances in the radiation therapy of laryngeal cancer with special reference to concentration radiotherapy and to analyze its bearing on the present day treatment of this disease.

It has been customary to separate cancer of the larynx into two main forms: extrinsic and intrinsic. There is, however, some confusion as to the exact definition of these terms, since they are used in the literature with different meanings depending on whether the particular classification is surgical or anatomic. According to the surgical classification, extrinsic carcinoma includes those arising from the aryepiglottic folds, pyriform fossae and postcricoid region as well as lesions arising within the laryngeal cavity which have spread outside the boundaries of the larynx. Obviously, lesions arising in the aryepiglottic folds, pyriform fossae and postcricoid region are not true laryngeal tumors but are lesions of the hypopharynx. The surgical classification found its justification in the fact that extrinsic carcinomas by definition are beyond surgical approach, whereas the intrinsic forms are considered operable. The anatomic classification refers to the primary site of origin of a lesion regardless of its subsequent extension. Thus, all tumors which arise within the larynx, regardless of their extension to the pharynx, remain by definition intrinsic. Because of this confusion and because many extrinsic carcinomas are actually carcinomas of the hypopharynx and not of the larynx, there are advantages in discussing carcinomas of the larynx with reference to their site of origin regardless of their subsequent extension. The classification used in this study is anatomic and histogenetic.

At birth the mucous membrane of the larynx, with the exception of the lingual surface of the epiglottis and the free borders of the vocal cords, is largely covered by cylindric epithelium. With increasing age, pavement epithelium gradually replaces the cylindric epithelium by a process of normal metaplasia. Pavement epithelium thus covers the borders of the epiglottis, the aryepiglottic folds and at times the false cords. The true cords remain covered by pavement epithelium throughout. Those sites in which the cylindric epithelium has been more abundant frequently give rise to tumors which are composed of cylindric nonepidermoid elements. Thus, in carcinoma of the false cords or the ventricular cavity the histologic type tends to be of a less hornifying variety and is usually composed of more undifferentiated nonepidermoid cells. In the true vocal cords, where pavement epithelium predominates, the type of epithelium is with rare exceptions that of epidermoid structure, and carcinomas in this region resemble the carcinomas of the cutaneous tissue and of the buccal cavity. These histogenetic factors have some bearing on the rate of growth and the type of lymphatic involvement as well as on the radiosensitivity of the carcinomas arising at the various sites.

From the Chicago Tumor Institute and the Hines Veterans Facility, Hines, Ill., aided by a grant from the National Cancer Institute.

CLASSIFICATION [1]

1. *Carcinoma of the Laryngeal Vestibule.*—This group includes two subvarieties: (*a*) carcinoma of the free borders and laryngeal surface of the epiglottis and (*b*) carcinoma of the false cords. The two varieties are discussed under the general term vestibular carcinoma because they are almost always involved together.

(*a*) Carcinoma of the free borders and laryngeal surface of the epiglottis generally produces a bulky ulcerated tumor which may grow to fill the entire laryngeal vestibule. The epiglottis itself may be partially destroyed. Anterior extension may result in tumefaction of the soft parts between the hyoid bone and the superior border of the thyroid cartilage. A second form of epiglottic carcinoma appears as a smooth, rounded, domelike swelling of the laryngeal surface of the epiglottis projecting into the vestibule. Ulceration may not be visible until late. A third type of epiglottic carcinoma arises from the free border of the epiglottis and spreads anteriorly into the vallecula.

TABLE 1.—*Classification of Cases According to Site of Origin*

Type	No. of Cases	Per Cent
Vestibule (false cord and epiglottis)	193	47
Ventricular cavity	26	6
True vocal cord	184	45
Subglottis	4	1
Origin undetermined	6	1
Total	413	100

(*b*) Carcinoma arising from the false cords tends to remain confined to the supraglottic region and often extends to the preepiglottic space. Extension to the true vocal cords results in intermittent hoarseness.

Carcinoma of the laryngeal vestibule has a tendency to grow rapidly and extend widely both by direct invasion and by lymphatic spread. This form is generally composed of undifferentiated cells and is comparatively radiosensitive.

2. *Carcinoma of the Ventricular Cavity.*—These tumors grow silently within the ventricular cavity without producing symptoms or signs over long periods. A sudden attack of dyspnea may be the first indication of disease. Laryngeal examination may disclose only a smooth elevation of the ventricular band without ulceration. When the lesion projects into the laryngeal lumen, biopsy of the papillary projections may be made without difficulty; however, when the tumor does not project into the laryngeal lumen biopsy is exceedingly difficult and often gives repeatedly negative results. The cells are generally undifferentiated, with a tendency to widespread invasion.

3. *Carcinoma of the True Vocal Cords.*—This type composes the majority of endolaryngeal tumors. The lesion begins in the midportion of the free border of the cord and extends anteriorly. Further extension anteriorly occurs either in the form of a thin layer of carcinoma extending along the superior and free borders of the cord or by an ulcerated destructive invasion of the cord itself. Extension then occurs to the anterior commissure and across the midline to the opposite cord. As the lesion extends posteriorly it involves the rich lymphatics in that site, which results in more rapid spread to the subglottic area, false cords, ventricle and aryepiglottic folds. In the beginning the clinical course is very slow.

4. *Carcinoma of the Subglottic Area.*—This type is probably more common than has been generally supposed. Many subglottic carcinomas have been regarded as downward extensions of carcinomas arising in the true cords. In this study only 4 cases have been identified, but it is probable that the incidence is considerably higher. Tomograms should prove of help in identifying this type. Subglottic lesions spread upward to involve the undersurface of the true cord and extend in all directions, involving adjacent cartilage. Since these lesions originate in a silent area, they do not give rise to early symptoms. Biopsy is difficult, and several attempts may fail to yield a positive diagnosis. The disease is nearly always more extensive than clinical examination discloses.

TABLE 2.—*Age Incidence*

Type	No. of Cases	Range of Ages	Average Age	Age Groups							
				10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89
Vestibule (false cord and epiglottis)	193	32-78	52.1	0	0	11	77	65	32	8	0
Ventricular cavity	26	33-65	47	0	0	3	16	5	1	1	0
True cord	184	19-81	52.7	1	1	8	77	51	33	9	4
Subglottis	4	40-68	51.7	0	0	0	7	1	1	0	0
Origin undetermined	6	42-50	46.5	0	0	0	5	1	0	0	0
Total	413	19-81	52.2	1	1	22	177	123	67	18	4

Table 1 shows the classification of the cases.

Stage of Disease: In 26 per cent of the 413 cases cervical adenopathy was present on admission to the hospital. The incidence of adenopathy in the different types was as follows: true vocal cords 7 per cent, ventricular cavity 19 per cent and vestibule (false cord and epiglottis) 45 per cent. Of 167 cases of carcinoma of the true cords in which the mobility of the cords was noted the cords were freely movable in 26 per cent, partly fixed in 26 per cent and completely fixed in 48 per cent. Of the 193 cases of vestibular carcinoma, 45 per cent were accompanied by cervical adenopathy.

Age: The average age among 413 patients was 52.2 years. The youngest was 19 years, the oldest 81 years. Table 2 shows the age incidence according to decades.

Symptoms: Dyspnea, pain, dysphagia and hemorrhage characterize lesions arising in the epiglottis. Intermittent hoarseness is a common symptom in lesions of the false cord and is generally due to pressure of the growth on the true cord rather than to invasion of this structure. The most striking symptom of carcinoma of the false cords is dyspnea. Dysphagia occurs when the lesion extends posteriorly and involves the pyriform fossa. A sudden attack of dyspnea in the absence of any previous warning may be the first indication of a carcinoma arising in the ventricular cavity.

Hoarseness is by far the most important and most common symptom of carcinoma of the true vocal cords. It occurred in 95 per cent of 185 cases in this series. Hoarseness occurs earlier when the lesions arise anteriorly and on the free margin of the cords. Pain

1. This classification is based on the one used in the Curie Institute of Paris.

and dyspnea are late symptoms. Table 3 shows the incidence and average duration of symptoms in the different forms of laryngeal cancer.

Biopsy: Biopsy was performed routinely in all cases of suspected laryngeal cancer. No effort was made to grade the specimens, although the microscopic examination included an estimate of the degree of cellular differentiation and anaplasia.

RELATION BETWEEN MICROSCOPIC STRUCTURE, PROGNOSIS AND RADIOSENSITIVITY

A radiosensitive tumor may be defined as one which can be completely sterilized without radionecrosis of the surrounding normal tissues. Since the property of radiosensitivity is a matter of degree and is intimately related to the efficiency of the treatment, it is impossible to draw a fine line of division between radiosensitive and radioresistant tumors.

The radiosensitivity of a tumor is intimately related to numerous factors: histogenetic, histologic, gross anatomic and constitutional. The underlying biologic phenomena are not at all understood. Clinical and pathologic experience emphasizes the inadequacy of microscopic structure alone in predicting radiosensitivity. The ultimate criterion and only absolute test of radiosensitivity of a tumor is its clinical behavoir under treatment. Because of numerous exceptions, it is hazardous to apply general rules to specific instances.

Many pathologists and surgeons believe that there is a relation between the degree of anaplasia and the results after surgical intervention in cases of cancer of the larynx, and some clinicians are influenced by the histologic grading in deciding between surgical operation and irradiation for certain operable intrinsic carcinomas of the larynx. The relation between the microscopic structure in the biopsy and radiosensitivity is even more complicated and is also highly controversial. The view that the histologic structure is of minor importance and of limited value in estimating radiosensitivity and determining the type of treatment is shared by numerous writers (Kriegsmann,[2] Harris and Klemperer[3] and others).

It has been noted that when the cells are uniformly small and undifferentiated, especially when they exhibit a convoluted plexiform arrangement, the lesion is usually relatively radiosensitive, even though one finds interspersed islands of adult differentiated squamous elements with pearl formation. This microscopic structure is often found in lesions originating in the false cords and epiglottis. I am not certain whether this histologic type ever originates in the true vocal cords. This structure is usually classified as grade 3 or 4 and interpreted as being more malignant and hence better treated by irradiation. Experience supports this view. It is my belief that when done by a pathologist especially experienced and skilled in this field, histologic grading has a value, but it must be interpreted broadly in relation to the clinical picture and in the light of modern radiation therapy.

The view that the presence of adult squamous keratinizing features in the biopsy indicates radioresistance has become entrenched in the literature on laryngeal cancer. This statement is usually followed by the deduction that such lesions, being radioresistant, should be treated by surgical intervention and not by radiation therapy. One obvious source of error is that a biopsy is frequently not a reliable index of the exact histologic composition of the lesion; thus, when a pathologist submits a diagnosis of squamous carcinoma from examination of a small fragment of tissue on a single biopsy he bases his report on the presence of adult, differentiated squamous features in the specimen submitted to him. If he had more tissue available, he might find undifferentiated elements or even a preponderance of such elements. In other words, the usual biopsy of a lesion in the larynx is wholly inadequate to permit an accurate estimate of the degree of differentiation. Multiple biopsies help to overcome this difficulty but do not solve it completely. Another obvious source of error relates to the treatment.

TABLE 3.—*Incidence and Average Duration of Symptoms on Admission*

Type	No. of Cases	Percentage of Patients with							Average Duration of Symptoms (Months)
		Hoarseness	Pain	Dysphagia	Dyspnea	Cough	Bleeding	Weight Loss	
Vestibule (false cord and epiglottis)	193	72	44.5	35.5	18	26.5	20	43.5	12.3
Ventricular cavity	26	92	24	20	24	8	8	44	16.8
True cord	184	95	20	12.5	13	12	9.2	27	18.6
Subglottis	4	75	0	25	50	25	25	59	26.2
Origin undetermined	6	50	0	16.5	33	0	16.5	50	29
Total	413	83.5	31.5	24	16.5	18.5	14.5	36	15.6

In view of the steady increase in the effectiveness of irradiation, it is obvious that the terms radiosensitive and radioresistant, expressing relative qualities, must alter their meaning. Lesions that were radioresistant to the old type of irradiation used many years ago are radiosensitive to the methods used today. Thus, the conception that adult keratinizing squamous carcinoma of the larynx is radioresistant and hence not curable by irradiation is no longer tenable. Schinz and Zuppinger[4] in 1937 reported favorable results of irradiation in 25 cases of adult squamous carcinoma of the larynx, and the observations now presented leave no doubt on this question. The experience described permits the definite conclusion that adult squamous carcinoma is not radioresistant to adequate external irradiation and is curable by adequate radiation therapy without radiation necrosis, provided the cords are not completely fixed.

Treatment.—Table 4 shows the disposition of the 413 cases of laryngeal cancer. Under the heading "inadequate irradiation" are included cases in which a full course of irradiation was not administered for one or more of the following reasons: (*a*) poor general condition, (*b*) advanced disease, (*c*) intercurrent disease resulting in interruption or cessation of treatment and (*d*) treatment before 1938 by technics which, according to present standards, must be regarded as having been wholly inadequate.

2. Kriegsmann: Demonstration von röntgenbestrahlten Kehlkopfkarzinomen, Hals-, Nasen- u. Ohrenarzt (pt. 2) **44**: 242, 1937.

3. Harris, William, and Klemperer, Paul: Pathologic Differentiation Between Radiosensitive and Nonradiosensitive Malignant Neoplasms of the Larynx. Arch. Otolaryng. **28**: 355 (Sept.) 1938.

4. Schinz, H. R., and Zuppinger, A.: Siebzehn Jahre Strahlentherapie der Krebse, Leipzig, Georg Thieme, 1937.

PROGRESS IN RADIOTHERAPY

The divided dose technic, generally known as the Coutard method,[5] or some modification of it is the most prevalent form of roentgen treatment now in use. So much confusion surrounds the use of the term "Coutard method" that an effort to clarify it may be desirable. First, it should be pointed out that Coutard has never adhered to a rigid technic or to a single principle of treatment. The technic to which the term "Coutard method" is generally applied is based on the use of moderate daily doses of roentgen rays until a pronounced reaction in the mucous membrane and skin is produced. Decided variations in daily and total doses and in intensity of the reactions are included in technics described as the "Coutard method." After using a treatment time of thirteen to sixteen days for several years, Coutard prolonged the time first to eighteen days, then to twenty days and finally to twenty-five days, using daily doses of 400 and 300 roentgens. Several years later he prolonged the time still further to thirty, forty and fifty days, with a corresponding reduction in the daily dose to 250, 200 and 150 roentgens. In addition to varying the total treatment time and the daily dose, Coutard has explored various other methods, including preparatory treatment, supplementary treatment, periodicity and treatment of the tumor bed with protection of the tumor. It is obvious, therefore, that the use of the term "Coutard method" without specifications is indefinite and misleading.

Since 1938 efforts have been under way in the Chicago Tumor Institute and the Hines Veterans Facility to extend the effectiveness of external irradiation to the more radioresistant lesions which had failed to respond to the former methods of roentgen and radium therapy.

THE METHOD OF CONCENTRATION

One principle of irradiation soon arrested attention. The new method was called concentration radiotherapy. The principles and technic were described in 1941.[6] The basis of this technic is the use of large daily doses over a comparatively short period (nine to twelve days) and a total dose sufficient to produce an "epithelite" and usually also an "epidermite." In one series of cases the daily dose is increased as the size of the port is diminished. For advanced extrinsic lesions the period of treatment is eighteen days. In selected cases the treatment is given in two cycles.

Voltage.—Experience with the use of voltages higher than 200 kilovolts (400,000 to 1,000,000) is gradually accumulating, and certain advantages of higher voltage have been observed and recorded; but, so far as I know, there is no published report of a comparison between the use of 200 kilovolt roentgen rays and the use of higher voltages based on comparative clinical studies in which voltage has been the only variable factor. Not until such studies are available will it be possible to draw definite conclusions. Studies of this type are under way. In the meantime, 400 kilovolt x-rays are preferred, and this voltage was used in these observations.

Roentgen Intensity.—In the development of the new technic, intensities varying from 3 to 10 roentgens per minute have been used. Serious injury to the connective tissue and blood vessels has been avoided, and it is probable that the use of low intensities has been an important factor in safeguarding the normal structures. It would probably be unsafe to use this technic with high roentgen intensities.

TABLE 4.—*Methods of Treatment*

Type	No. of Cases	Radiation Only: Adequate	Radiation Only: Inadequate	Radiation Followed by Laryngectomy	Radiation Followed by Other Surgical Procedures *	Laryngectomy	Other Surgical Procedures *	Very Advanced Symptomatic Treatment Only	Refused or Abandoned Treatment	Treated Elsewhere Prior to Admission
Vestibule (false cord and epiglottis)										
Without adenopathy	106	46	34	5	0	0	1	2	5	13
With adenopathy	87	37	23	1	1	0	0	11	1	13
Ventricular cavity										
Partly fixed	4	3	1	0	0	0	0	0	0	0
Completely fixed	22	12	5	0	0	2	0	1	0	2
True cord										
Movable	44	30	5	1	1	1	1	0	2	3
Partly fixed	42	20	3	4	1	3	1	3	3	4
Completely fixed	80	20	8	6	0	28	3	1	4	10
Movability undetermined	18	0	0	0	0	0	0	0	0	18
Subglottis	4	2	0	0	0	0	1	0	0	1
Origin undetermined	6	0	0	0	0	0	0	0	0	6
Total	413	170	79	17	3	34	7	18	15	70

* Hemilaryngectomy, laryngofissure or dissection of cervical lymph nodes.

Fields.—In the treatment of cancer of the larynx, one or two fields may be used. As a rule, the peripheral portions of a lesion are more radiosensitive than the central portion, at or near the point of origin. Many carcinomas regress under external irradiation and leave a central unsterilized resistant remnant, which under some circumstances is best treated with a sharp, intensive irradiation by the interstitial method. Based on the belief that the central portion of a carcinoma is more resistant and therefore requires more intensive irradiation, a technic has been developed in which the size of the field is gradually reduced as the daily dose is gradually increased. If the supposition is correct that the periphery of a tumor is more sensitive than its center, this technic permits a more efficient distribution of the irradiation. Radiation energy, which is so often wasted on the normal tissues in the periphery of a tumor, is conserved by means of this technic for the treatment of the central, more resistant, portion, which is generally the site of recurrence. At the same time the normal structures are protected from unnecessary injury. This technic is especially suited for lesions which are small and comparatively radioresistant. In the treatment of intrinsic cancer of the larynx, I generally begin with a field of 48 square centimeters. This is reduced gradually to 12 and sometimes to 6 square centimeters. Great

5. Coutard, Henri: Roentgen Therapy of Epitheliomas of Tonsillar Region, Hypopharynx and Larynx from 1920 to 1926, Am. J. Roentgenol. **28**: 313, 1932.

6. Cutler, Max: Concentration Method of Radiotherapy for Cancer of the Mouth, Pharynx and Larynx, J. A. M. A. **117**: 1607 (Nov. 8) 1941.

precision is necessary with the use of such small fields. The apparatus is provided with a device for centering the rays and a diaphragm; these permit accurate localization. Great care must be taken in the immobilization of the patient, and the field must be checked during the treatment.

Time (total treatment days).—For many years efforts have been made to determine the optimal time over which a given cancer should be irradiated. Regaud's original experiments with rams led him to suggest a total period of twenty to twenty-five days, but his later experiments suggested a treatment time of ten days. One highly important fact emerges from this experience in radiation therapy—namely, that within certain still undefined limits the more radioresistant the lesion is, the shorter must be the treatment time and the larger the daily dose. A superficial papillary carcinoma of the true cord, for example, can be sterilized with 6,000 roentgens given in small daily doses over a period of forty to fifty days. A carcinoma of the true cord which has infiltrated the underlying muscle and caused a partial or complete fixation of this structure as a rule cannot be sterilized by this method, but in a certain proportion of cases such a carcinoma can be sterilized when 6,000 roentgens is given over a period of twelve days or less. It seems as if the more radioresistant lesions require not only an adequate total dose but an adequate daily dose. In other words, an adequate total dose distributed over a period of such length that the daily dose falls below a certain level fails to sterilize the more radioresistant carcinomas. Different total treatment periods, varying between four and eighteen days, are being tested. The treatments are given twice daily and on consecutive days. The optimal period has not yet been determined.

Daily and Total Doses.—One of the questions that arises with regard to dosage is whether the more radiosensitive forms of cancer should be treated with smaller total doses than the more resistant types. According to my experience, generally speaking it is hazardous to administer less intensive treatment to a supposedly more sensitive lesion. There are exceptions to this rule. It seems safer to treat all lesions on the assumption that they belong to the more radioresistant variety. Thus one approaches the irradiation of a cancer on the basis of the maximum treatment that can be safely tolerated by the patient and by the normal tissues surrounding the growth.

Telecurietherapy (10 Gm. radium bomb).—The apparatus for telecurietherapy contains 10 Gm. of radium and is used at a distance of 12.5 cm. The ports vary from 10 cm. in diameter to 4 square centimeters. An effort is under way to determine the comparative value of telecurietherapy and roentgen therapy. All factors that can possibly be controlled are made comparable, so that the principal variable factor is the quality of the rays. Lesions of the mouth, pharynx and larynx are selected for their similarity as to site of origin, extent of disease and structure. Such comparable lesions are treated by the two methods in order to determine the comparative results. All that can be said at this time is that telecurietherapy is a highly useful method of irradiation and some interesting results have been obtained, especially since the "method of concentration" has been employed.

Thirteen patients with carcinoma of the true cord in which the cord was not completely fixed were treated with telecurietherapy; 11 of them are free from disease. Lederman and Mill [7] have reported 15 cases of carcinoma of the larynx treated with telecurietherapy and observed for five years after treatment; 7 of the patients are alive and well.

Present Technic.—After tests of numerous variations in the technic of external irradiation using the principle of concentration, several methods have crystallized which seem to be the most effective so far. Each technic is applicable to a certain type of laryngeal cancer as regards location and extent. These technics are in no way considered as final but are presented as one stage in the progress of these studies. Each of the three technics will be illustrated by a case report.

1. Roentgen therapy, 400 kilovolts, eleven consecutive treatment days, single field, increasing dose, diminishing port, total dose 5,700 roentgens: [8] This technic is used for carcinoma of the true cord or early carcinoma of the false cord. The following case presents the details:

CASE 1.—A man aged 38 presented an ulcerated lesion occupying the left true cord, touching the anterior commissure and almost reaching the posterior commissure. The lesion was bulky and extended into the ventricle of the larynx, onto the left false cord and subglotically. The left hemilarynx was almost completely fixed; the left arytenoid was partly fixed. The right hemilarynx was normal. Biopsy showed the growth to be a squamous carcinoma. He was given roentgen treatment from June 15 to June 26, 1942, with the following factors: 400 kilovolts, 5 milliamperes, filtration 5 mm. of copper, distance 84 to 115 cm., single left lateral port 5 by 5 cm. gradually diminished to 3 by 3 cm., intensity 4 to 3.3 roentgens per minute. Two equal treatments were given daily beginning with 100 roentgens twice a day and increasing to 425 roentgens twice a day, a total dose of 5,400 roentgens, measured on the skin.[9] After a twelve day interval the following supplementary treatment was given to the opposite side of the larynx: 500 roentgens twice daily for two days through a 3 by 3 cm. port (dose 2,000 roentgens, grand total 7,400 roentgens). The patient acquired epithelite and epidermite. The lesion disappeared slowly, no longer being visible five weeks after the end of the main cycle of irradiation. There was no evidence of disease eighteen months after treatment; the voice was normal, and the larynx had a normal appearance. The lesion was much too advanced for laryngofissure and would have required total laryngectomy, a procedure that had been advised by several laryngologists. The patient was a lawyer and public speaker; he was psychologically unsuitable for laryngectomy and, in fact, had refused this procedure.

2. Roentgen therapy, 400 kilovolts, interrupted method, ten treatment days, two fields, increasing doses, diminishing ports, dose 7,700 roentgens: [10] This technic is used in treatment of more advanced intrinsic carcinomas of the larynx in which the advantages of the therapeutic test are desired. In case of certain operable intrinsic lesions this method of interrupted treatment generally permits one to estimate the probable radiosensitivity of the lesion before the second phase of the irradiation is given. In this manner the second cycle can be omitted if the lesion appears to be relatively radioresistant and one can resort to laryngectomy. The following case presents the application of the technic:

CASE 2.—A man aged 43 had experienced continuous and increasing hoarseness for one year and pain on swallowing for three months. On examination it was found that the right true and false cords were the seat of a large ulcerated mass projecting into the lumen of the larynx, with almost

7. Lederman, M., and Mill, W. A.: The Teleradium Treatment of Intrinsic Cancer of the Larynx, J. Laryng. & Otol. **57**: 471, 1942.
8. In some instances an additional dose of 2,000 roentgens has been given to the opposite side about two weeks after the end of the series, as in the case reported.
9. The dose now used is 5,700 roentgens.
10. A third cycle consisting of 2,000 roentgens in two days is sometimes added, as in the case reported here.

complete fixation of the right hemilarynx. The biopsy showed squamous carcinoma. For six days (Feb. 24 to March 1, 1941) the patient received two roentgen treatments daily with the following factors: 400 kilovolts, 5 mm. copper filter, 85 cm. distance, 5 milliamperes, ports 30 to 20 square centimeters. The doses were first day 400 roentgens, second day 500 roentgens, third day 550 roentgens, fourth day 650 roentgens, fifth day 700 roentgens and sixth day 800 roentgens, a total dose of 3,600 roentgens, measured on the skin. Roentgen intensities varied between 6.3 and 8.9 roentgens per minute. The first cycle of treatment was given over the right side of the larynx. On March 12, eleven days after completion of the first cycle, the lesion showed the first sign of regression and there was more mobility of the right hemilarynx. Two days later, the thirteenth day after the last treatment, there was noted further regression and increased mobility.

Because of this pronounced improvement, it was decided to administer the second cycle of irradiation. The interval between the two cycles was twelve days. The second cycle began on March 14 and ended on March 17, with the following factors: 400 kilovolts, filter 5 mm. of copper, 85 cm. distance, 5 milliamperes, ports 30 to 12 square centimeters. The doses were: first day 850 roentgens, second day 950 roentgens, third day 1,050 roentgens and fourth day 1,150 roentgens, with two treatments daily, a total dose of 4,000 roentgens, measured on the skin. The total dose during the second cycle was given over the left side of the larynx. The first cycle was 3,600 roentgens and the second cycle 4,000 roentgens, making a total of 7,600 roentgens for the two cycles during ten days of treatment.

TABLE 5.—*Results of Radiation Therapy in 170 Cases of Laryngeal Cancer (70 per Cent of Lesions Were Advanced)*

Classification	Patients Given Adequate Radiation Therapy	Number Living and Well	Number Living with Disease	Number Died of Cancer	No. Died of Other Causes (No Recurrence)
Vestibule (false cord and epiglottis)					
Without adenopathy	46	14	7	23	2
With adenopathy	37	5	4	27	1
Ventricular cavity	15	2	6	7	0
True cord					
Movable	30	24	0	4	2
Partly fixed	20	15	1	2	2
Fixed	20	4	0	15	1
Subglottis	2	1	0	1	0
Total	170	65	18	79	8

The maximum reaction on the skin consisted of a deep pigmentation. The maximum epithelial reaction was a mild epithelite. The mobility of the right hemilarynx was restored to normal on April 4, eighteen days after the completion of the second cycle of irradiation. The lesion continued to regress and finally disappeared on April 25, thirty-eight days after the last treatment of the second cycle; but there remained a small, irregular, nonulcerated nodule, about 6 mm. in diameter, situated on the posterior extremity of the right true cord. On May 9, fifty-three days after the last treatment, it was decided to administer a third course of irradiation. It was not possible to decide clinically whether this nodule contained a remnant of carcinoma, and it was believed that a biopsy should not be performed. From previous experience it seemed that a third course of irradiation could be given with safety. Consequently the third course was administered in two days as follows: field over the right side of the larynx, 400 kilovolts, 5 mm. of copper, 80 cm. distance, 7.5 square centimeter port, 7.4 to 9.8 roentgens per minute, 500 roentgens twice daily for two days, or a total of 2,000 roentgens, measured on the skin. The grand total for the three cycles of irradiation was 9,600 roentgens. The last treatment was given on May 10, 1941. The nodule regressed slowly and finally resolved into a small fibrous tag about 3 mm. in diameter, which has remained stationary almost three years. It is obviously an area of scar tissue. On Jan. 1, 1944 there was no sign of disease and the voice was normal. For some patients, especially persons with thin necks, this irradiation is somewhat too intense; hence the daily and total doses have been reduced by 10 to 20 per cent, depending on the thickness of the neck.

There are several significant features about this case. The most important is the disappearance of an extensive intrinsic squamous carcinoma of the larynx with almost complete fixation of the hemilarynx and subsequent freedom from recurrence for almost three years. Several features of the treatment are interesting. The large total dose (9,600 roentgens) administered in only twelve treatment days was possible with but little reaction in the skin and mucous membrane. The division of the treatment into three cycles with two intervals afforded an opportunity to observe the response of the lesion and plan further treatment accordingly. Finally, this case illustrates that it is practical to test the radiosensitivity of a lesion with a partial irradiation and to use the information obtained as a guide to further treatment.

3. Roentgentherapy, 400 kilovolts, eighteen consecutive treatment days, single field, diminishing port, increasing dose, total dose 6,500 roentgens: This technic is used for the more extensive so-called extrinsic carcinomas of the larynx (pyriform fossa, aryepiglottic folds, epiglottis). The following case exemplifies the method:

CASE 3.—A man aged 57 had an extensive swelling over the region of the thyroid and cricoid, obliterating the normal contour of the anterior surface of the neck. There was pronounced swelling and ulceration in the region of the right true and false cords, extending to the subglottic region. The right arytenoid was enlarged and the right hemilarynx partly fixed. There was no cervical adenopathy. Biopsy showed squamous carcinoma. Roentgen examination of the soft tissue of the larynx disclosed extensive destruction of the cricoid and thyroid cartilages. Roentgen treatment was given between July 7 and July 30, 1938 over a period of twenty-one treatment days, one treatment daily through a single right lateral field, with 400 kilovolts and 5 milliamperes filtered through 8 mm. of copper; the distance varied between 65 and 90 cm., and the size of the port varied between 8 by 10 and 3 by 4 cm. The daily dose was increased gradually from 100 to 700 roentgens, measured on the skin, and the roentgen intensity varied between 4.1 and 7.5 roentgens per minute. The total dose was 6,500 roentgens. The tumor regressed rapidly during the first few days of treatment. Approximately one week after treatment was begun, an abscess over the thyroid region was incised and evacuated. The weight increased, and the general condition improved. On October 6, about ten weeks after the completion of treatment, there was no definite evidence of disease, the general condition was excellent and the patient had no complaints. Subsequent roentgen examination of soft tissue of the larynx disclosed a remarkable restoration of the cartilages to what seems to be a normal state. There is no sign of recurrence at this time, five and one-half years after completion of treatment.

One must be extremely cautious in drawing conclusions from this particular case because, although the lesion was most extensive, it was obviously also highly radiosensitive.

This technic [11] is the most effective so far observed for the more advanced carcinomas of the larynx. When the cervical adenopathy has been too extensive to be included in the portals, an additional cycle of treatment has been given to such areas as could not be included in the first cycle of treatment.

11. This was the first case treated by this method, and the treatment time was twenty-one days. The treatment time has now been reduced to eighteen days, and two treatments are given daily. The total dose remains the same.

RESULTS

Table 5 shows the results of radiation therapy in 170 cases of laryngeal cancer receiving adequate therapy. It should be noted that there were only 30 early lesions in the entire group. These were the movable carcinomas of the true cord. There were 20 partly fixed lesions of the true cord which may be regarded as moderately early. The remainder of the patients, numbering 120 (70 per cent) had advanced carcinoma, in many instances accompanied by cervical adenopathy. Since the table includes patients who have been free from disease only one year, no conclusion is drawn as to the permanence of the results. The table is intended only to indicate the present status of the patients.

Table 6 shows an analysis of the results of therapy for the various types of laryngeal cancer by year of admission. The variation in the percentages of patients free from disease must be due largely to corresponding differences in the proportion of advanced lesions and to some degree to the efficiency of the treatment.

Table 7 shows the results of radiation therapy in 50 cases of operable so-called intrinsic carcinomas of the true cords in which the vocal cords were freely movable or partly fixed, and table 8 shows the results in this group by year of admission.

It is instructive to analyze the failures of radiation therapy in the cases of early lesions. There were 7 failures in the 50 cases of movable and partly movable carcinomas of the true vocal cords. Two patients acquired radionecrosis as a result of a dosage that they could not tolerate. This occurred in the beginning of these studies, and this complication has since been eliminated. It is well known that the most important source of error in radiation therapy is underdosage rather than overdosage. In an effort to avoid radionecrosis, inadequate treatment is usually given, with the natural consequence of low curability and high incidence of recurrence. In order to obtain the maximum benefits from radiation therapy, the intensity of the treatment must approach the tolerance of the normal tissues very closely. The individual variations in the tolerance to irradiation add to the difficulties. An important factor that lowers the tolerance of the normal tissues to irradiation is the presence of secondary infection in the larynx when treatment is begun or its entrance during the treatment. Radionecrosis can arise as a result of this complication even when the intensity of the treatment is well within the limits of safety.

One of the 7 failures was caused by radionecrosis associated with secondary infection, and in another patient with syphilis radionecrosis developed. In both the latter cases the dosage was well within the limit of safety. One patient experienced a subglottic recurrence after the disappearance of an early lesion of the true cord, and another acquired new lesions in the larynx and pharynx, probably representing lymphatic extensions. In both cases the disease showed clinical evidence of extremely high malignancy and histologic signs of severe anaplasia. One 69 year old debilitated patient refused to cooperate as regards eating and died of inanition about one month after completion of treatment.

TABLE 8.—*Results of Radiation Therapy in 50 Cases of Carcinoma of the True Cord in Which the Cord Was Either Movable or Partly Fixed*

Year of Admission	Number Treated	Alive and Free of Disease at the End of				
		1938	1939	1940	1941	1942
1938	9	9	7	7	7	7
1939	8	..	8	7	7	7
1940	11	..	..	11	9	9
1941	15	..	..	..	12	9
1942	7	..	..	..	..	7
Total	50	9	15	25	35	39*

* One patient died four years and seven months after treatment of cancer of the palate and free from cancer of the larynx. This patient is counted as cured of laryngeal cancer.

TABLE 6.—*Results of Radiotherapy for the Various Types of Laryngeal Cancer by Year of Admission* *

	No. of Patients	1938		1939		1940		1941		1942	
		Treated	Well	Treated	Well	Treated	Well	Treated	Well	Treated	Well
Vestibule											
Without adenopathy	46	7	1	9	2	5	2	11	2	14	2
With adenopathy	37	4	0	7	0	6	0	14	3	6	1
Ventricular cavity	15	2	1	0	0	2	1	4	0	7	0
True cord											
Movable	30	5	2	7	6	6	6	8	6	4	4
Partly fixed	20	4	4	1	1	5	4	7	4	3	2
Fixed	20	7	0	3	0	2	0	6	3	2	1
Subglottis	2	1	0	1	1	0	0	0	0	0	0
Total	170	30	8	28	10	26	13	50	18	36	16
Percentage living and well			26.7		35		50		36		44.4

* Under each year is given the number of patients treated during that year and in the column marked "Well" is the number free of disease on Jan. 1, 1944.

Causes of Failure of Radiation Therapy.—The most important cause of failure of radiation for laryngeal cancer is the extent of the disease. The other factors are the general condition of the patient and the efficiency of the treatment. Patients who are debilitated by chronic disease do not tolerate the treatment well, and the presence of syphilis is especially unfavorable. Aspiration bronchopneumonia sometimes complicates the radiation therapy of advanced infected carcinoma of the larynx in old debilitated patients.

TABLE 7.—*Results of Radiation Therapy in 50 Cases of Movable and Partly Fixed Squamous Carcinomas of the True Cord*

	No. of Patients Treated	Number Free of Disease 1 to 5 Years *	Percentage Well
Movable	30	25 §	83
Partly fixed	20	15 †	75
Total	50	40	80

* Twenty-three of 28 patients, or 82 per cent, are well and have been free of disease more than three years (see table 8).

§ One died four years and seven months after treatment, of carcinoma of the palate; 1 died seven months after treatment, of angina pectoris. In both instances there was no sign of recurrence; the first is counted as cured, the second as a failure.

† One died one year and eleven months after treatment, of cerebral hemorrhage; 1 died 2 years and one month after treatment, of heart disease. In both cases there was no sign of recurrence. In the table these 2 patients are counted as if they had died of cancer.

COMMENT

Early Diagnosis.—Out of 170 cases of carcinoma of the larynx treated by adequate radiation therapy, the disease was comparatively early in only 50 cases, or 30 per cent. When one considers the entire series of 413 cases, the incidence of early lesions is approximately 20 per cent. (There were 88 comparatively early lesions in 413 cases.) Thus a reasonable chance of cure at the very outset existed in only 20 per cent of the cases. This is a challenge to the medical profession and to the public in the matter of early diagnosis and a special opportunity for leaders in cancer control. Since these lesions produce early symptoms and since most of them (lesions of the true cord) grow slowly and almost never metastasize in their early stages, the opportunity for a planned campaign of education in this field of cancer control is indeed unique.

The majority of cancers of the larynx begin on the true vocal cords. Hoarseness is an early symptom in 95 per cent of these cases. Examination of the larynx with a laryngeal mirror easily establishes the presence of a growth on the vocal cords, and biopsy readily confirms the diagnosis. Early lesions limited to one cord that have not reached the posterior commissure or crossed the anterior commissure yield about 80 per cent cures by laryngofissure and have at least an equal chance of cure by adequate radiation therapy, with restoration of the voice to normal. It is only too evident, therefore, that the problem of laryngeal cancer hinges mainly on early diagnosis. No form of internal cancer offers a more favorable opportunity for early detection. The main difficulty lies in the fact that hoarseness is such a common symptom associated with the presence of a cold. A campaign of education should be undertaken to acquaint the public with these facts, and the layman should be taught to insist on a laryngeal examination, preferably by a laryngologist, if hoarseness persists for longer than two weeks. Theoretically, a combination of early diagnosis and prompt and appropriate treatment should render cancer of the larynx largely a disease of historical interest.

Treatment.—The two most significant features in these studies are (1) the results of treatment of 50 operable carcinomas of the larynx by radiation therapy and (2) the use of a new and more effective method of irradiation. It is evident that the good results obtained in this selected group of cases are due to the fact that the lesions were comparatively early as well as to the greater effectiveness of the new method of treatment.

Of the 50 cases of operable lesions, the cords were freely movable in 30 cases and partly fixed in 20 cases. In many instances the lesion involved both true cords or extended to the false cords, ventricular cavity or subglottis. Twenty-four of the lesions, or 48 per cent, were amenable to laryngofissure. Twenty-one, or 42 per cent, were clearly too advanced for laryngofissure and would have required total laryngectomy, and in 5 cases, or 10 per cent, a decision as to the extent of the operation indicated is difficult. There were only 2 recurrences (4 per cent) in this group. Both were due to an exceptionally high degree of malignancy, indicated by the clinical course as well as by the pronounced anaplasia in the microscopic structure.

Although no positive conclusions can be drawn from the more recent cases, it was considered useful to publish the results as they stand in order that other investigators who are interested may pursue the problem along similar lines. It should be added that although the five year period of freedom from recurrence is generally accepted as an indication of cure this figure is arbitrary. Thus it is well known that for cancer of the breast and thyroid it is entirely inadequate, whereas patients with early carcinomas limited to the true vocal cords treated by adequate radiation therapy rarely have recurrences after two years of freedom from disease. In the group of cases of movable and partly fixed carcinomas of the true cords the longest interval between treatment and recurrence was one year and seven months. This experience permits the statement that when a carcinoma of the true cord is treated by adequate radiation therapy while the cord is still freely or partly movable, the chances of recurrence or metastasis after two years of freedom from disease are extremely remote.

So uniformly unsuccessful was radiation therapy of laryngeal cancer up to 1922 that surgical operation was the only form of treatment for this disease. The situation changed in 1922, when Regaud, Coutard and Hautant [12] related their experience with roentgen therapy in 6 cases of inoperable carcinomas of the larynx before the International Congress of Otology in Paris. Coutard subsequently reported 27 per cent of five year cures among 142 cases of carcinoma of the larynx treated with x-rays in the Curie Institute of Paris. There followed numerous reports by various authors confirming these results. Harmer [13] of London treated a series of early operable carcinomas of the true vocal cord by placing radium against the base of the lesion through a window made by resecting a portion of the thyroid cartilage, with excellent results. Further reports of radiation therapy of operable laryngeal cancer include those of Quick,[14] Jackson,[15] Lenz,[16] Blady,[17] Cutler [18] and others.

Surgeons and radiotherapists alike have properly hesitated to substitute a comparatively new method of treatment for the standard surgical procedures of laryngofissure and laryngectomy. Yet there was every reason to believe that carcinomas of the larynx would yield to radiation therapy. Being epidermoid carcinomas histologically, they fall directly within the radiosensitive group in the same way as epidermoid carcinoma of the skin and mucous membrane of the mouth. The view that adult squamous carcinoma is radioresistant and hence incurable by radiation therapy has been proved a fallacy and is no longer tenable. Furthermore, a high percentage of carcinomas arising in the false cords, epiglottis, ventricular cavity, aryepiglottic folds and pyriform fossae are noticeably undifferentiated and comparatively sensitive to radiation.

In 1931 I began to treat selected cases of operable carcinoma of the true cords by means of radiation

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14. Quick, Douglas: Carcinoma of the Larynx, Am. J. Reontgenol. **38**: 821 (Dec.) 1937.

15. Jackson, Chevalier, and Jackson, Chevalier L.: Cancer of the Larynx, J. A. M. A. **111**: 1986 (Nov. 26) 1938.

16. Lenz, M.: X-Ray Treatment of Diseases of the Larynx, Ann. Otol., Rhin. & Laryng. **52**: 85, 1943.

17. Jackson, Chevalier L., and Blady, John V.: Criteria for the Selection of Treatment of Cancer of the Larynx, Arch. Otolaryng. **37**: 672 (May) 1943.

18. Cutler, Max: Cancer of the Larynx: Relation Between Gross Anatomy, Microscopic Structure and Radiosensitivity, J. A. M. A. **115**: 1339 (Oct. 19) 1940. Cutler, Max: Cancer of the Larynx: A Radiotherapeutic Test as an Aid in Choosing Between Operation and Irradiation, Arch. Otolaryng. **39**: 53-58 (Jan.) 1944.

therapy. In the beginning, this therapy was used only when the patient refused laryngectomy or when there were general contraindications to surgical intervention. As the effectiveness of irradiation increased and the results improved, my colleagues and I began to irradiate lesions of borderline operability, and finally in 1938, when the method of concentration radiotherapy seemed especially effective, we began to treat operable lesions by the new methods of irradiation by choice. It was determined early in this research that, except in isolated instances, carcinomas of the true cords with complete fixation of the larynx were unfavorable for radiotherapy. It was also established that mobility or partial mobility of the cords is a most important and favorable sign indicating relative radiosensitivity.

The progress of irradiation in the treatment of laryngeal cancer has naturally led to the question whether radiation therapy should continue to be limited to cases in which operation is contraindicated. Until recently this is the view which was held by the laryngologists. Thus Martin[19] advised operation as the method of choice for intrinsic cancer of the larynx. He pointed out that some early intrinsic lesions of the cord are curable by roentgen therapy, but he added that the superiority of roentgen therapy over surgical removal has not been demonstrated. A change in this attitude began with the report of the Jacksons in 1938. Speaking from an extensive surgical experience and impressed with the improved results of roentgen therapy demonstrated by their associated roentgenologists, these authors made the following statements:

> Since the year 1930, however, our observations have led us to believe that there are growths classed as operable for which the patient is justified in choosing irradiation in preference to operation. . . . Our statistics do not yet justify abandonment of the well established operation of laryngofissure when the growth is operable by this method. By operable growth in this connection we mean early intrinsic cancer of limited extent. On the other hand, when the malignant growth is locally ideal for operation but the patient is a bleeder or has a serious organic ailment such as marked arteriosclerosis, advanced cardiac disease, intractable diabetes, pulmonary tuberculosis, a psychosis or any other condition abnormally shortening life expectancy, we would now class the patient as unsuitable for operation. Classification of patients has been somewhat changed by the improved results obtainable by irradiation and we now classify as unsuitable for operation a somewhat larger proportion of patients with early intrinsic disease. . . . As between a laryngectomy and irradiation, we are decreasing the number of laryngectomies in proportion to the number of patients treated with irradiation.

The authors concluded that their experience warranted them in the belief that the future will probably see a progressive decrease in the relative number of laryngectomies.

The trend is further indicated by Schall,[20] who stated recently that "the ideal treatment is one that not only eradicates the disease but also leaves a normal physiological state. External irradiation answers these requirements. Laryngeal cancer that responds to irradiation leaves the patient with a normal, or nearly normal, useful voice." For localized lesions of the cord, Schall advises irradiation if the cancer is of grade 3 or 4 (Broders' classification) and laryngofissure for grades 1 or 2.

Examination of table 8 shows that 28 patients were treated in the years 1938, 1939 and 1940 and that 23, or 82 per cent, are alive and have been free from disease more than three years. The Jacksons[21] cited between 80 and 85 per cent of three year results in patients treated by laryngofissure in strictly suitable cases. Of the 28 lesions in this series, only 14 were early enough for laryngofissure, 10 would have required total laryngectomy, and for the remaining 4 the decision is difficult. It seems, therefore, that the results of radiation therapy as administered in this series of cases are superior to those of surgery, especially when one considers that at least 10 patients who would have required total laryngectomy were rendered free from disease by radiation therapy, with restoration of the voice to a practically normal state.

For surgeons who may choose laryngofissure in preference to radiation therapy, these results should lead to a more strict selection of cases for laryngofissure. In any event, patients who are not strictly suitable or are definitely unsuitable for laryngofissure but whose lesions are not completely fixed should be given an opportunity to choose radiation therapy in preference to total laryngectomy.

The procedure at this time is to perform laryngectomy for fixed intrinsic lesions in which there are no general contraindications to operation, and as the results of irradiation improve we are more strict in our classification of operability; but we go one step further, which we consider our results justify. When the cords are still movable or partly movable, we choose irradiation in preference to surgical operation regardless of the histologic grading. Some of these lesions are so early as to be amenable to laryngofissure; others would require complete laryngectomy. Table 6 shows the results obtained with 20 fixed lesions of the true cords in patients who either refused operation or in whom there were general contraindications to laryngectomy. Only 4 patients are free from disease. In cases in which a decision between surgical operation and irradiation is difficult for local or general reasons, we apply the radiotherapeutic test and are guided by the response to the initial cycle of treatment. Included in this group are patients whose lesions are too extensive for laryngofissure and to whom loss of the voice is a matter of special concern. Under these circumstances we sometimes feel justified in executing either a partial or complete irradiation with the understanding that a laryngectomy will be performed if the irradiation fails. In some instances we have had to resort to operation, and in others the patients are apparently cured by irradiation. The selection of treatment is highly individual, and no rigid rule can be applied to all cases. The method of treatment depends on numerous factors, including the location and extent of the lesion, the extent of infiltration as indicated by mobility of the structures, the general condition of the patient and in certain instances the patient's ability to adjust himself to laryngectomy.

CONCLUSIONS

Intrinsic squamous carcinoma of the larynx is curable by correct radiation therapy, the percentage of cures depending on the extent of the lesion and the efficiency of the treatment. Concentration radiotherapy has

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20. Schall, LeRoy A.: Carcinoma of the Larynx, New England J. Med. **229**: 574, 1943.
21. Jackson, Chevalier, and Jackson, Chavelier L.: Cancer of the Larynx, Philadelphia, W. B. Saunders Company, 1939.

proved to be the most effective form of irradiation. When the cords are freely movable or only partly fixed, the curability is high; but when they are completely fixed, cure is difficult and rarely accomplished. Eighty-two per cent of the patients with movable and partly fixed lesions of the true cords are alive and have been free from disease more than three years. The voices of these patients are practically normal. The most significant result of this research is the eradication by means of an improved method of radiotherapy of a group of intrinsic squamous carcinomas of the larynx so advanced as to have required total laryngectomy and hitherto generally regarded as radioresistant and incurable by irradiation.

430 North Michigan Avenue.

USE OF THROMBIN AND FIBRINOGEN IN SKIN GRAFTING

PRELIMINARY REPORT

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The importance of skin grafting in military reconstructive surgery cannot be overestimated. Improvements in technic of grafting must be sought for constantly and particularly improvements which will shorten operative time and increase percentage of takes. The possibility of such an improvement using thrombin and fibrinogen arose from the observations of Dr. M. E. Sano of Temple University School of Medicine, who used heparinized plasma and pressure as an adhesive for grafts.[1]

Thrombin and fibrinogen have both been known for many years, as has the reaction between them, namely the capacity of the former to transform the latter into insoluble fibrin. It is said to be this reaction which is responsible for blood coagulation. A main deterrent to the exploration of the medical and surgical potentialities of these materials had been the difficulty and expensiveness of their preparation. This has been circumvented in recent years by the work of Seegers[2] and Parfentjev[3] and by the improvements in fractionation of human plasma by E. J. Cohn and his associates.[4] In the latter fractionation both thrombin and fibrinogen become by-products of human serum albumin. The extensive use of the latter by the armed forces as an "antishock" agent has increased the availability of these by-products. Thrombin has already been mentioned several times in the literature as a local hemostatic.[5] Fibrinogen has recently been employed in neurosurgical and tendon repair work with encouraging results.[6] To our knowledge neither of these materials has been used in connection with skin grafting except perhaps the use of thrombin as an adjunct to hemostasis. It is our purpose in this paper to present findings on 8 patients skin grafted with varying technics using thrombin and fibrinogen.

Because it is well known that results in skin grafting are difficult to evaluate unless one standardizes all conditions, an outline of the general and local treatment will be presented first. Before the start of these observations, it had been confirmed by two of us[7] that unsatisfactory results occurred in the taking of grafts unless hemoglobin, plasma proteins, prothrombin and the general condition of the patient were kept at a high level. Accordingly, these practices were put into effect in the course of the use of thrombin and fibrinogen:

GENERAL TREATMENT BEFORE AND AFTER GRAFTING

1. High protein (more than 100 Gm. daily), high carbohydrate, high cysteine, low fat diet.

2. Supplementary routine vitamin A, thiamine, nicotinamide, riboflavin, ascorbic acid and B complex in doses exceeding daily requirements. Vitamin K as necessary to maintain normal prothrombin level.

3. Ferrous sulfate and blood transfusions as necessary to maintain hemoglobin above 13 Gm. per hundred cubic centimeters.

4. Plasma and blood transfusions as necessary to maintain plasma proteins above 6.5 Gm. per hundred cubic centimeters.

LOCAL TREATMENT OF BURNS PRIOR TO SKIN GRAFTING

1. Six per cent sulfanilamide ointment, pressure dressings and splints as described elsewhere.[8]

2. Change of dressings after ten to fifteen days and subsequent open treatment with saline and chloroazodin compresses, sulfanilamide 10 per cent calcium carbonate powder,[9] petrolatum gauze and adhesive strapping or reapplication of 6 per cent sulfanilamide ointment and pressure.

3. During the forty-eight hours before grafting, continuous chloroazodin compresses and sulfanilamide powder.

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The products of human plasma fractionation employed in this work were prepared from blood collected by the American Red Cross and processed by the Department of Physical Chemistry, Harvard Medical School, Boston, under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and Development and Harvard University.

Most of the thrombin used in this work has been the rabbit "hemostatic globulin" supplied by the Lederle Laboratories, Inc. A smaller amount of the thrombin and all the fibrinogen used was human in species and supplied by Drs. S. H. Armstrong and E. J. Cohn of the Department of Physical Chemistry, Harvard Medical School. Some of the latter was redissolved, redispensed into smaller containers, refrozen and redried by the Blood Plasma Laboratory of the U. S. Naval Medical School.

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TECHNIC OF SKIN GRAFTING USING THROMBIN AND FIBRINOGEN

On the basis of the experience to date, the following technic has been evolved:

1. Thrombin is supplied dried in vials requiring 5 cc. of distilled water for regeneration.

2. Fibrinogen is supplied similarly.

3. Thrombin is applied as a spray by means of an atomizer.

4. Fibrinogen is applied by dipping the grafts or flooding the surface.

5. The grafts are cut. Free hand, simple pinch or split thickness grafts taken by the Padgett dermatome were used. All split thickness grafts were perforated to allow for drainage.

6. Bleeding from the donor site is controlled with thrombin, dusted with sulfanilamide 10 per cent calcium carbonate powder and a 6 per cent sulfanilamide ointment dressing applied.

7. The recipient site is cleansed with ether; exuberant granulations and undesirable scar tissue are removed by sharp dissection, and bleeding is controlled by thrombin, pressure and elevation.

8. The grafts are dipped in the fibrinogen solution and fitted on the site to conform to the defect. The area is then sprayed with thrombin and simultaneously flooded with fibrinogen and the pressure dressing applied immediately.

9. When large grafts are sutured into place, fibrinogen and thrombin are run under the graft following the suturing, and immediately pressure is applied for two minutes with a rubber sponge.

10. The application of hot packs to the grafts was found to increase the adhesiveness still further.

DRESSING APPLIED TO ALL GRAFTS

1. Perforated cellophane is applied over the graft and sprayed with sulfanilamide 10 per cent calcium carbonate powder.

2. Over the cellophane are placed ten layers of gauze saturated with glycerin [10] containing 2 per cent of sulfanilamide. A sheet of plain cellophane is placed over this and then rubber sponges or pads of cellucotton that are secured by adhesive tape or adhesive so as to maintain continuous firm pressure.

3. Grafts are dressed on the third, fifth and seventh days and from then on as indicated.

REPORT OF CASES

CASE 1.—On June 1, 1943 bad burns were sustained over the face, hands and forearms and feet. All areas healed quickly except the backs of the hands and the fingers, which had third degree burns. On June 28 the hands were ready for grafting, and split thickness grafts were applied by the collodion technic of Poth [10] and a few sutures. Only portions of the grafts took because of uncontrollable hemorrhage that formed clots under the grafts, and because of the inflexibility of the collodion. On July 4 the left hand was grafted with poor results, apparently from hemorrhage under the grafts and slipping due to poor bandaging. The areas became infected, and it was impossible to graft again until August 2. At this time the split thickness grafts were cut into 1 cm. or smaller squares [10] for use as pinch grafts. It was difficult to get these to adhere to slanting surfaces or in the webs of the fingers. It took a variable period for the pieces to stick without any additional procedures. It was decided at this time to compare whole blood, plasma, pooled plasma and fibrinogen solution with and without thrombin with respect to speed and efficacy of adherence of the grafts.

The granulating area was painted with the blood, plasma and fibrinogen and then the pieces of grafts were dipped in the thrombin solution and applied to the painted recipient areas and the time was measured until the grafts no longer would slide when held perpendicularly and until one could demonstrate fibrin strands by teasing the edge of the graft with a needle. The results are presented in the accompanying table.

The thrombin was most effective in controlling hemorrhage from granulating surfaces after trimming and from the donor sites. All these grafts took except a very few placed in the webs of the fingers and over the joints, and this was probably due to inadequate immobilization.

CASE 2.—Both legs were extensively burned about seven days before entry. Infection set in. After entry to the hospital both limbs were immobilized in plaster casts after application of 6 per cent sulfanilamide ointment. After two weeks the casts were removed. The left leg was completely healed. The right leg presented a large, irregular, clean granulating surface involving the side of the ankle, extending up to the head of the fibula and from the anterior border of the tibia to the midpart of the calf posteriorly. No epithelial islands remained within this area, but epithelial proliferation was going on actively from the surrounding skin edges. Split thickness grafts were taken from the thighs, fitted to the granulating area and held in place with a few stay sutures. There was considerable bleeding around the sutures. Thrombin, elevation and pressure quickly controlled this hemorrhage. The thrombin solution was then run under the grafts, followed by fibrinogen solution and pressure; within one minute the graft was held firmly against the granulations. The usual dressings were applied, and the leg was placed in a posterior plaster splint.

Comparative Study of Various Agents Applied Between Graft and Recipient Area in Case 1

Materials Applied Between Graft and Recipient Area	Time to Adhere, Minutes	Degree of Adhesiveness	Comment
Nothing (control)	3-13	Low	
Whole citrated blood	4-7	High	Vision obscured by clotted blood
Whole citrated blood plus thrombin	2/3-1 1/4	High	Vision obscured by clotted blood
Patient's citrated plasma	3-5	High	
Patient's citrated plasma plus thrombin	3/4-1 1/6	High	
Pooled citrated plasma	5-7	High	
Pooled citrated plasma plus thrombin	1/4-5/12	High	
Fibrinogen	2-8	High	
Fibrinogen plus thrombin	1/6-2/3	High	

Hemorrhage from the two donor sites was controlled within one minute by thrombin and pressure.

About 40 per cent of the graft slipped anteriorly and did not take. We believe this was due to too much tension on the sutures and could have been avoided by letting the graft retract maximally before suturing. The remainder of the graft did well, and further grafting was not necessary.

CASE 3.—A traumatic amputation of the tip of the third left finger was treated with saline solution and chloroazodin compresses and within one week was ready for grafting. The skin edges and exuberant granulations were trimmed. Considerable bleeding started that was not controlled by elevation but was stopped within two minutes by thrombin, pressure and elevation. Then multiple pinch grafts were applied. It was very difficult to apply a dressing without brushing off the grafts; therefore the grafted area was flooded with fibrinogen solution, and thrombin was sprayed onto it with an atomizer. Within a few seconds a thin fibrin gel was anchoring the pinch grafts in place, and this greatly facilitated the application of the dressing. All the grafts took, and within two weeks the patient had a usable finger.

10. Poth, E. J.: A Technic of Skin Grafting, Surg., Gynec. & Obst. 75: 779-784 (Dec.) 1942.

CASE 4.—A broken ankle and a contused, lacerated left thigh resulted in a large granulating surface measuring about 5 inches by 3 inches.

A split thickness graft was applied and sutured loosely in four places. Citrated plasma, obtained from the patient, was run under the graft followed by rabbit thrombin. There was firm adherence within one and a half minutes. Serum formed under the upper half of the graft, and this part did not take. We believe this was due to an inadequate pressure dressing.

The upper half was regrafted with pieces of free hand grafts about 1 inch square after being dipped in the patient's plasma and sprinkled with human powdered thrombin. These grafts took completely.

CASE 5.—A contused, lacerated injury was sustained to the anterior surface of the leg just lateral to the tibia. This resulted in an elliptic granulating wound 6 inches long and 2½ inches wide. A split thickness graft was very loosely sutured into place after the surface of the granulations had been dusted with powdered human thrombin. The hemorrhage from the sutures was easily controlled by thrombin and pressure. The blood that flowed under the graft was clotted, and the graft was snugly held in place against the granulations. This graft took completely.

Hemorrhage from the donor area was controlled almost entirely by powdered thrombin that was rubbed on the surface, except for one small artery that persisted in spurting.

CASE 6.—Gas gangrene had developed in comminuted, compound fractures of the toes and metatarsals. All the toes except the small toe were amputated (guillotine type) at the head of the metatarsals. Free incision of the skin over the foot was performed. With sulfadiazine, local hydrogen peroxide and zinc peroxide and polyvalent antitoxin the patient recovered. A large irregular granulating defect over the heads of the metatarsals resulted, measuring 3¼ by 1¾ inches. This was covered with a split thickness graft that was sutured in place with interrupted sutures. Considerable bleeding started and was controlled by thrombin and pressure except at the plantar border of the graft, where all measures were useless. The usual pressure dressing was applied, but a hematoma developed under the plantar half of the graft and this area did not take.

Later, pinch grafts were applied to this area and flooded with fibrinogen and thrombin solutions. These grafts took completely.

A large hematoma then developed under the thin epithelium that had grown in from the surrounding skin and had not been excised at the time of grafting. This was excised, cleaned up and grafted. This time a small piece of split thickness was taken, cut into small squares (1 cm. or less) and placed on the raw surface and secured by the fibrinogen-thrombin technic. The immediate result was excellent. There was less than a millimeter between the individual pieces. No suturing was necessary, and less time was consumed than if one had sutured a single piece in place.

This patient is still under observation.

CASE 7.—Extensive damage to both thighs had left a granulating defect 4½ by 6 inches on the right thigh and 2¼ by 3¾ inches on the left thigh. Both surfaces were very concave. Split thickness grafts were taken, and hemorrhage from the donor sites was dramatically controlled by thrombin within forty-five seconds.

On the right leg half inch squares of skin and irregular odd shaped pieces were fitted together after flooding the granulations with the patient's own citrated plasma. Each piece of skin was dipped in liquid thrombin (rabbit). After two minutes the grafts were firmly adherent. On the left leg one perforated piece of skin was sutured in place, and then thrombin and plasma were run under the graft and pressure was applied. After two minutes the graft remained firmly adherent to the concave depression. The two sides did equally well with complete takes.

CASE 8.—A burned heel resulted in a 1½ inch round defect. This was covered with multiple pinch grafts, flooded with fibrinogen solution and sprayed with rabbit thrombin. Immediately a firm fibrin gel formed which held all the grafts in place. The usual dressing was applied. The result was a complete take and a valuable, usable heel resulted.

COMMENT

Poth [10] has pointed out four factors with respect to skin grafting which "militate against early vascularization: (1) an anatomically poor recipient bed, (2) faulty approximation of graft and recipient surface, (3) an improperly prepared graft and (4) the presence of infection." The evidence that has been presented on the use of thrombin and fibrinogen appears to indicate that these agents may be of distinct value with regard to the first two of these factors. By the utilization of thrombin it is possible to trim granulations and scar tissue until the bed is automatically perfect and yet control the hemorrhage in the bulk of instances very quickly. A more extensive report on our use of thrombin as a hemostatic will appear elsewhere.[11]

Approximation of graft and recipient bed is enhanced by the combined use of thrombin and fibrinogen. The first stage of the taking of a graft is consummated almost instantaneously by the formation of a thin fibrin cement between the graft and recipient area, into which vascular beds may grow under ideal conditions. Dead space can be obliterated completely. Here it should be pointed out that, by the use of relatively pure fibrinogen instead of fresh plasma as its source, serum formation is minimized. The latter phenomenon occurred in case 4 and delayed the take.

Among the advantages in this technic we were impressed perhaps most of all by the amount of time saved. Hemorrhage was controlled quickly. Fewer sutures were used and at times none at all. Dressing was simplified because of the greater adherence of the grafts. The application of grafts in awkward places such as the webs of the fingers where suturing was difficult was simplified by the omission of suturing.

SUMMARY AND CONCLUSIONS

1. Thrombin and fibrinogen have been used in skin grafting.

2. Hemorrhage from the recipient and donor sites was quickly and easily controlled by thrombin in the majority of instances.

3. The grafts were quickly and well anchored into place by the combined use of thrombin and fibrinogen, so that fewer sutures or at times none at all were necessary.

4. It is believed that the use of thrombin and fibrinogen will be a valuable adjunct to skin grafting. It will not replace suturing completely. It is particularly useful with pinch grafts and flagstone grafts.

11. Cronkite, E. P.; Deaver, J. M., and Lozner, E. L.: Experiences in the Use of Thrombin With and Without Soluble Cellulose for Local Hemostasis, War Med. 5: 80 (Feb.) 1944.

Time Lost Because of Illness.—The time lost because of illness averages between seven and nine days per employed person and represents about 3 per cent of the usual working year. It is estimated that the 36 million wage earners in the country lose about 250 million work days and the 24 million school children lose about 175 million days in school each year from illness. The financial loss of the country as a whole represented by the lost earning power and reduced production totals well over 2 billion dollars a year, equivalent to one-half the cost of maintaining the national government.—The Hospital in Modern Society, edited by Arthur C. Bachmeyer and Gerhard Hartman, New York, Commonwealth Fund, 1943.

Clinical Notes, Suggestions and New Instruments

GENERALIZED EXFOLIATIVE DERMATITIS DUE TO SULFADIAZINE

ROSWELL D. JOHNSON, M.D., NEW HAVEN, CONN.

The object of this case report is to present one of the most alarming toxic reactions of sulfadiazine therapy—generalized exfoliative dermatitis—together with a description of the treatment employed.

REPORT OF CASE

W. A., a boy aged 10 years of Scandinavian parentage, whose history included a Rammstedt procedure for hypertrophic pyloric stenosis at the age of 6 weeks, two convulsions associated with the onset of acute infections at the ages of 1½ years and 3½ years, streptococcic fever with suppurative cervical adenitis at the age of 3½ years and the usual acute exanthems of childhood, had never been treated with any sulfonamide drug in any form previous to the onset of the present illness, nor had he ever had a dermatitis from any cause.

The family history was completely negative in all respects save for asthma, which developed late in the life of the maternal grandmother.

Fig. 1.—Appearance of patient just before height of exfoliative dermatitis. Note here the acute illness of the patient, the eyes swollen shut and crusted blood on the lips.

The present illness started about July 13, 1943 with an acute respiratory infection. The temperature gradually rose to 40 C. (104 F.) on July 16 and the family physician made a diagnosis of pneumonia of the left lower lobe. Bacteriologic or x-ray studies were not done. The patient remained at home, and sulfadiazine therapy was started that day. As an initial dose the child was given 1.5 Gm. by mouth followed by 0.5 Gm. four times daily. The patient's weight was 35 Kg. (77 pounds). The temperature slowly fell to normal within the course of a week. On the eighth day of treatment the drug dose was cut to 1.5 Gm. daily. On the ninth day the temperature was 38.4 C. (101.1 F.) and the face was noted to be very red. On July 25 (tenth day) the drug was stopped, the temperature was still 38.4 C. and the facial redness still pronounced. The following day the mother noted a "prickly heat" rash on the boy's face and arms and a temperature of 39.2 C. (102.5 F.). Almost overnight the rash became much worse, myriads of vesicles appeared and he was admitted to the pediatric service of the New Haven Hospital on July 27.

On admission the temperature was 40.4 C. (104.7 F.); the boy was rational but acutely and seriously ill. A definite morbilliform rash covered the entire body, confluent in areas. Over the neck, shoulders and arms were numerous large blebs, some of which had already ruptured (figs. 1 and 2). No jaundice was present. There was a very severe conjunctivitis with purulent discharge, chemosis and photophobia. An ulcerative bleeding gingivostomatitis was present with crusted blood on the lips. The cervical nodes were moderately enlarged and very tender.

Fig. 2.—Local condition of skin. Note the large bleb and many smaller ones with complete involvement of entire surface.

The lungs and heart were essentially normal. There was considerable edema of the glans penis and some mucosal pouting at the meatus. Voiding was both difficult and painful. It was impossible for the boy to take any significant amount of fluid by mouth; proctoclyses were impossible, for even the minor trauma of inserting a thermometer initiated rectal bleeding.

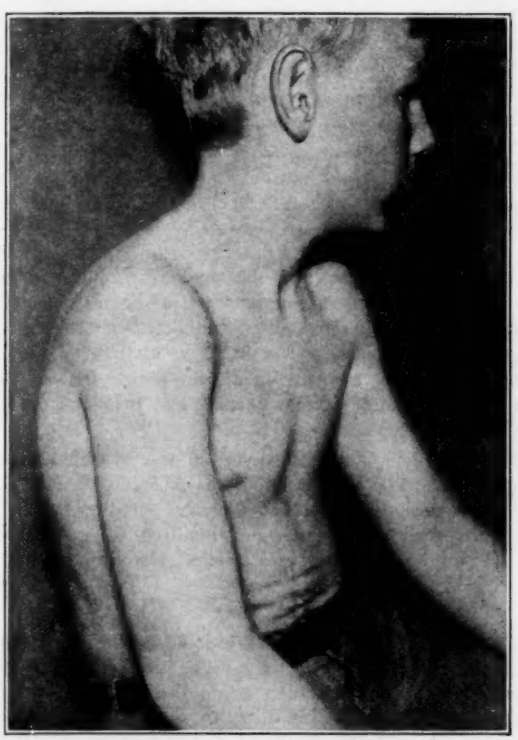

Fig. 3.—Appearance of patient two months after recovery, showing normal skin.

Because of the close resemblance between the skin of the patient and that seen in a severe scald, it seemed logical to treat him as for a burn. Consequently, the skin was gently wiped with alcohol, sterile petrolatum strips were applied and overlaid with gauze packs and fluffs, and an elastic bandage then wound snugly over all. This completely covered the extremities and

From the Department of Pediatrics, Yale University School of Medicine, and the Children's Clinic of the New Haven Hospital.

most of the torso. It was left in place for nine days. Pain was controlled with morphine and particular attention paid to care of the mouth, a topical anesthetic being used at times to ease the discomfort and aid in taking fluids by mouth. Supportive treatment included a constant intravenous drip of 2,500 cc. of fluid daily consisting of 10 per cent dextrose 2 parts and isotonic solution of sodium chloride 1 part. To this was added 100 mg. of ascorbic acid, 10 mg. of thiamine and 25 mg. of niacin, a total of 1,100 cc. of pooled plasma and 6.25 cc. of fresh whole citrated blood.

On the second hospital day the boy vomited a piece of tissue measuring approximately 10 by 0.8 by 0.2 cm., presumably an esophageal cast, judging from the mucosal folds present. On the fifth hospital day the patient reached his lowest point, and recovery seemed improbable. New blebs were appearing daily and continued to do so until the eighth day. A progressive granulocytopenia was present for a time with a very definite shift to the left and the nonsegmented forms greatly outnumbering the segmented neutrophils. Ten units of crude liver extract was given intramuscularly in divided doses with equivocal effect. At no time were the blood platelets or the bleeding time essentially altered. By the ninth hospital day the boy was noticeably better, and improvement thereafter was steady. He was discharged from the hospital on the twentieth day with new skin

Clinical Course

Date	Sulfadiazine Levels: Blood	Sulfadiazine Levels: Vesicles	White Blood Cells	Nonseg./ Seg.	Plasma Protein	Blood Culture	Blood	Plasma
7/27	1.9	2.1	10,300	35/60	...	Negative	...	250
7/28	...	...	11,100	31/56	8.0 G.	Negative	...	...
7/29	...	...	13,100	36/54	...	.....	...	...
7/30	...	...	6,200	37/38	7.1	B. subtilis	250	200
7/31	...	...	4,850	37/22	...	Negative	...	...
8/ 1	...	...	3,700	24/12	6.8	.....	375	300
8/ 2	...	...	4,000	23/ 9	6.5	B. subtilis	...	250
8/ 3	...	...	7,150	19/ 8	...	.....	...	150
8/ 4	0.0	1.0	8,400	16/ 8	...	.....	...	...
8/ 5	...	...	.....	.....	...	Negative	...	...
8/ 6	...	...	12,400	24/48	...	.....	...	...
8/ 8	...	...	10,500	22/52	...	.....	...	...

over the blistered areas and the mucous membranes greatly improved. Follow-up examinations one week after hospitalization and two months later showed complete recovery (fig. 3).

Details of the clinical course are presented in tabular form.

Nine examinations of urine during the period showed absence of proteinuria, hematuria and casts. The urinary output was usually 1,000 to 1,500 cc. daily.

On August 2, blood electrolyte studies revealed chlorides 96.4 milliequivalents per liter, sodium 134.5 milliequivalents per liter and potassium 5.6 milliequivalents per liter. The nonprotein nitrogen was 25 mg. per hundred cubic centimeters. Repeated cultures of blebs were sterile. No virus studies were done.

COMMENT

This additional case of severe exfoliative dermatitis due to sulfadiazine is probably one of the most extensive reported with recovery.[1] There was nothing about the dosage of the drug that was unusual; the daily dose of 2 Gm. (0.85 grain per pound) is well within the accepted range of safety, and the total dose of 19.5 Gm. is frequently exceeded without toxicity.

The plan of therapy, particularly that concerning the local care of the skin, was designed to prevent infection, minimize protein loss and simplify nursing procedures with the patient.

1. Raffetto, J. F., and Nichols, S.: A Nearly Fatal Reaction to Sulfadiazine in a Ten Year Old Girl Involving Skin, Eyes and Oropharynx, J. Pediat. **20**: 753 (June) 1942. Greenberg, S. I., and Messer, A. L.: Fatal Bullous Dermatitis Following Administration of Sulfadiazine, J. A. M. A. **122**: 944 (July 31) 1943.

A CASE OF SILICOSIS CAUSED BY WHEAT DUST

THOMAS F. HEATLEY, M.D.; DALTON KAHN, M.D., AND C. R. REX, M.D., TOLEDO, OHIO

F. B., a man aged 55, presented himself for examination on March 4, 1941 with a complaint of severe dyspnea on exertion, dry cough and pain in the chest. His history showed that he had always done fairly heavy work, chiefly for railroads and street railways, but enjoyed good health and never lost time from illness or sought medical advice up to 1929, when he took a job with a railroad, unloading cars of wheat and storing the wheat in elevators. Part of the time he worked in a tunnel where a traveling belt carried the wheat to an elevator and dumped it there. The dust was so thick, especially in the tunnel, that he could see only a few feet before him. He kept this up for eight years, from 1929 to 1937, when he was obliged to quit because of progressive shortness of breath. He had no history of pneumonia or tuberculosis.

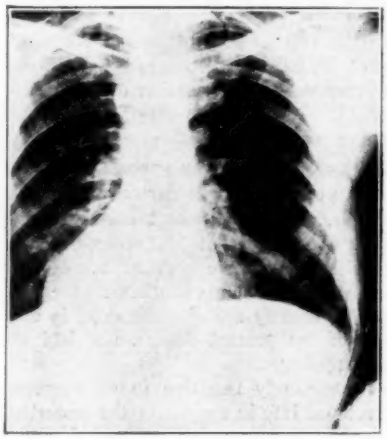

Fig. 1.—Appearance March 4, 1941.

Examination (T. F. H.) showed that he was moderately well nourished and above average intelligence. Blood pressure was 90 systolic, 70 diastolic. Examination of the urine showed no pathologic condition of the kidneys. There was no evidence of syphilis or of tuberculosis. Respirations were increased, 26 per minute, and the chest expansion manifestly diminished.

The stereoscopic examination of the chest (D. K.) revealed that the thorax was barrel shaped and symmetrical. The right base showed no evidence of fluid, and the dome of the diaphragm was smooth and showed no adhesions, the bronchial tree markings were accentuated and showed fibrosis, the hilus glands showed increased density with advanced fibrosis, the bronchial tree markings were accentuated and extended well toward the periphery in the axillary space, the upper lobe markings were accentuated and the apex was not entirely clear or well aerated.

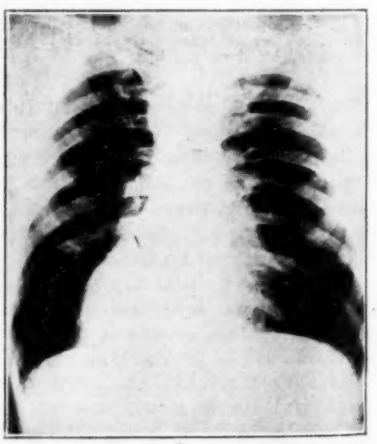

Fig. 2.—Appearance Oct. 18, 1943.

The left base was clear and the diaphragm dome was smooth; the cardiophrenic angle was not as sharp as normal. The hilus glands were increased and showed definite fibrosis with but little evidence of calcification. Definite mottling extended from the hilus into the parenchyma of the lung; both upper and lower lobes were involved. The heart shadow was almost entirely on the left, and the aortic knob was normal. The apex was clear and showed good aeration.

The radiologic diagnosis was chronic pneumonoconiosis involving both lungs but more definite on the right side. No demonstrable evidence was obtained of tuberculosis or cavitation.

Samples of dust were gathered from one of the cars while it was being loaded with wheat and from the aforementioned

tunnel with the belt conveying wheat, and these were examined chemically and microscopically by one of us (C. R. R.).

The material under examination was found to be composed of whole wheat grains, oat hulls and particles of broken grain. Other particles in the form of finer particles under screen separation were found in the percentages given in table 1.

Fig. 3.—Silica from car found passing 325 mesh sieve; × 1,000.

The results of the tests on the dust from the car are given in table 2. The dust from the tunnel was of much the same character but contained a larger percentage of very small particles, no less than 31.55 per cent passing through the 325 (0.044 mm.) mesh; i. e., 31.55 per cent were less than 44 microns in size. The silica content of this dust was 9.96 per cent. In

TABLE 1.—*Percentages of Particles*

	In Millimeters	Percentage
100 mesh	0.147	8.7
150 mesh	0.104	4.0
200 mesh	0.074	4.0
325 mesh	0.044	2.0
Passing 325 mesh	0.044	20.24

4.0% between 147 microns and 104 microns
4.0% between 104 microns and 74 microns
2.0% between 74 microns and 44 microns
20.5% from 1 to 44 microns

both samples the proportion of free silica in the dust rose as the size of the particles fell. It was also observed that the smaller particles were more irregular in shape and had sharper edges than the larger ones.

A second examination was made on Oct. 15, 1943. Comparison of the x-ray films with those of 1941 showed that, without any further exposure to silica-containing dust, the disease had progressed. At neither examination was there any evidence of tuberculosis.

The hilus regions of both lungs showed an increase in density of the fibrous tissue; the lung markings generally showed a hardness compared with former plates. The emphysema was more pronounced and the heart shadow contour had changed as a result of the changed lung condition.

It was our opinion that the vital capacity of the lungs had been diminished and this patient's emphysema was progressing because of silicotic deposits in the lung tissue.

SUMMARY

A workman employed for eight years in an atmosphere thick with dust from wheat (loading and unloading railway cars) presented a roentgenogram typical of advanced silicosis without evidence of tuberculosis.

TABLE 2.—*Dust from the Car*

	In Millimeters	Percentage
100 mesh	0.147	8.7
150 mesh	0.104	4.0
200 mesh	0.074	4.0
325 mesh	0.044	2.0
Passing 325 mesh	0.044	20.25

4.0% between 147 microns and 104 microns
4.0% between 104 microns and 74 microns
2.0% between 74 microns and 44 microns
20.5% from 1 to 44 microns

Silica found in material collected passing 150 mesh and on 200 mesh	10.52%
Silica found in material collected passing 200 mesh and on 325 mesh	16.36%
Silica found in material passing 325 mesh	19.96%

Examination of the dust gathered at his working places showed that 20.25 and 31.55 per cent of the particles were between 1 and 44 microns in size. The silica content of these particles was 19.96 and 9.96 per cent.

Fig. 4.—Silica from tunnel found passing 325 mesh sieve; × 1,000.

A second examination, made two years later, showed that the fibrotic process in the lungs had progressed, although there had been no further exposure to silica-containing dust.

At present, Jan. 11, 1944, he is completely incapacitated.

1838 Parkwood Avenue.

Special Article

A CLINICAL EVALUATION OF VACCINATION AGAINST INFLUENZA

PRELIMINARY REPORT

By Members of the Commission on Influenza, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army

In the autumn of 1943 members of the Commission on Influenza, and associates, Board for the Investigation and Control of Influenza and other Epidemic Diseases in the Army, Preventive Medicine Service, Surgeon General's Office, United States Army, undertook with Dr. Thomas Francis Jr., as director, to carry out a controlled clinical trial of the prophylactic efficacy against epidemic influenza of a concentrated, inactivated vaccine containing the viruses of influenza types A and B. Preceding studies had shown that a vaccine similarly prepared was capable of furnishing definite protection against experimental induction of influenza A or B.[1] The present account constitutes a preliminary clinical evaluation of the influence of vaccination on the incidence of influenza during the epidemic of influenza A which occurred in November and December 1943.

VACCINE

The vaccine was prepared in the laboratories of biologic firms according to specifications furnished by the commission and purchased at minimal cost with commission funds. Virus was obtained from the allantoic fluid of embryonated hen's eggs inoculated forty-eight hours earlier. The virus was concentrated approximately ten times in isotonic solution of sodium chloride following adsorption to, and elution from, the embryonic erythrocytes.[2] The infectious capacity was inactivated by solution of formaldehyde in a concentration of 1 : 5,000. Phenyl mercuric nitrate 1 : 100,000, or borate 1 : 50,000, was then added for bacteriostatic purposes. The material was bottled in 50 cc. amounts in liquid form. The standard requirements for sterility of bulk and bottled biologic products were met.

Each 1.0 cc. of the vaccine was made up of 0.5 cc. representing type A virus recovered from 5.0 cc. of allantoic fluid and 0.5 cc. representing the type B virus recovered from 5.0 cc. of allantoic fluid. The type A component represented equal parts of the PR8 strain and of the Weiss strain, isolated in May 1943.[3] The type B component contained only the Lee strain.

The vaccine was tested by inoculation of mice and eggs to demonstrate that no infectious capacity remained. Its capacities to agglutinate chicken erythrocytes[4] and to induce immunity in mice after intraperitoneal inoculation were also determined as indicative of antigenic activity.

Control material consisting of isotonic solution of sodium chloride to which solution of formaldehyde 1 : 5,000 and phenyl mercuric nitrate 1 : 100,000 were added was prepared, bottled and subjected to the same tests for sterility.

THE PLAN OF STUDY

With approval of appropriate authorities, the study was carried out in Army Specialized Training Program units of eight universities in different parts of the United States and in a ninth group comprising the members of Army Specialized Training Program units of five New York medical and dental colleges. Approximately 12,500 men were involved. The populations were highly stable, so that the proportion of men lost from the study was extremely low. In most instances the men were housed as large groups in dormitories.

Vaccine prepared by two different firms was employed in all locations. Except in one unit equal volumes of the two preparations were mixed just before inoculation, so that no selection occurred on this basis. Each

Table 1.—*Results in Group 1: Cornell University, Ithaca, N. Y., and New York Medical and Dental Colleges*

Major Norman Plummer, M. C., A. U. S., and Wilson G. Smillie, M.D., Cornell University Medical College, New York. Dr. Jocelyn Woodman participated in the clinical studies at Ithaca.

Epidemic period: Cornell, 11/23-12/18; New York Medical Colleges, 11/23-12/18/43.
Diagnosis: Patients reporting with temperature of 100 F. or greater. Cases of obviously different origin excluded.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 11/27	12/4	12/11	12/18	Total Cases	Incidence, per Cent	Percentage of Total Cases
Cornell University *	11/10/43	Vaccinated	498	1	0	1	13	15	3.01	26
		Control	484	2	4	9	28	43	8.88	74
		Total	982					58		
N. Y. Medical and Dental Colls.†	10/21-11/4/43	Vaccinated	976	1	0	6	7	14	1.43	30
		Control	977	2	6	12	13	33	3.37	70
		Total	1,953					47		

* The incidence 11/28 to 12/6/43 is based to a large extent on questioning, since unit was on furlough during this period.
† These data are considered incomplete. The low incidence is probably related to the difficulty encountered in obtaining proper reporting among the high percentage of men living in private homes.

Support and assistance in arranging the studies were furnished by Col. Charles M. Walson, Col. Don C. Hilldrup, Col. Herbert C. Gibner and Col. Howard C. Moore, respectively, surgeons of the 2d, 6th, 7th and 9th service commands.

Continued aid and cooperation were furnished by the commanding officers of the different A. S. T. P. units among which the investigations were made, namely Col. Edwin R. Van Deusen, Cornell University; Col. Arthur E. Fox, Princeton University; Lieut. Col. J. D. Cope, Rutgers University; Col. Raymond P. Cook, C. C. N. Y.; Col. Frederick C. Rogers, University of Michigan; Col. Harry King, University of Minnesota; Col. Luke D. Zech, University of Iowa; Col. Francis R. Hunter, University of California; Lieut. Col. Mark R. N. Zwilliam, Columbia Medical and Dental College; Lieut. Col. Phillip B. Connelly, Cornell Medical College; Capt. Robert Geiss, Long Island Medical College; Major Albert C. Dorat, New York Medical College, and Capt. George F. Dyson, New York University College of Medicine and Dentistry.

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company or organization within a unit was divided in half, so that alternate individuals received, respectively, vaccine and control material. One dose of 1.0 cc. was given subcutaneously. After vaccination was completed the records containing this information were removed to other quarters, so that on subsequent visits the observer had no information as to whether a patient belonged to the vaccinated or the control group. Individuals who did not receive inoculation of control material were not considered controls. Vaccination was carried out at different times in the various units but in the main was completed by the middle of November. After the group had been vaccinated, new arrivals were not taken into the study. The time of vaccination in relation to the recognized onset of influenza is seen in the subsequent data.

Prior to vaccination and throughout the period thereafter, close observation of all individuals reporting to sick call was maintained by members of the investigating groups. The same type of record card was used throughout. An effort was made to gain uniformity in the designation of cases by accepting for the diagnosis of influenza those individuals who at the time of reporting to sick call had symptoms suggestive of influenza, i. e. rapid onset with mild upper respiratory complaints, chilliness, aches and prostration and were admitted to hospital with sublingual temperatures of 100 F. or more without obvious evidence of other disease. Fresh typical common colds, characteristic follicular tonsillitis and infectious mononucleosis were excluded from the diagnosis of influenza. Owing to local regulations or facilities, certain variations in the requirements for admission to hospital were encountered. In general, however, it appears that the criteria adopted would tend more to the inclusion in the series of cases which were not influenza than to the exclusion of cases which were influenza. While extensive collections of materials for virus and serologic investigation were made, the clinical impressions here stated have not been modified or corrected by any such data.

TABLE 2.—*Results in Group 2: Princeton University, Princeton, N. J., Rutgers University, New Brunswick, N. J., and College of City of New York*

George K. Hirst, M.D., Major Norman Plummer, M. C., A. U. S., and William F. Friedewald, M.D., Laboratories of International Health Division, Rockefeller Foundation, New York.

Epidemic periods: Princeton, 11/28-12/18/43; Rutgers, 11/22-12/18/43; C. C. N. Y., 11/7-12/18/43.

Diagnosis: Patients reporting with respiratory infection and temperature of 100 F. in whom diagnosis of some other disease could not definitely be made.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 11/27	12/4	12/11	12/18	Total Cases	Incidence, per Cent	Percentage of Total Cases
Princeton	11/2/43	Vaccinated	590	0	8	6	3	17	2.88	27
		Control	560	0	21	17	7	45	8.04	73
		Total	1,150					62		
Rutgers	11/1/43	Vaccinated	606	2	0	0	5	7	1.16	14
		Control	606	4	8	20	9	41	6.77	86
		Total	1,212					48		
C. C. N. Y.	11/19/43	Vaccinated	1,050	33	8	6	0	14*	1.33	16
		Control	1,055	27	52	17	6	75*	7.11	84
		Total	2,105					89*		

* Because influenza began about the time vaccination was done, figures represent only those cases which occurred on or after the ninth post-vaccination day. The number of cases indicated for the week ended November 27 include all occurring during the period from November 7 to November 27.

TABLE 3.—*Results in Group 3: University of Michigan, Ann Arbor*

Jonas E. Salk, M.D., and Wilbur J. Menke, M.D., Department of Epidemiology, School of Public Health, University of Michigan.

Epidemic periods: First case 11/12/43. Epidemic peak 11/20-12/4/43.

Diagnosis: Clinical diagnosis of influenza at time of reporting on sick call, temperature of 100 F. or more and admitted to hospital.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 11/20	11/27	12/4	12/11	12/18	Total Cases	Incidence, per Cent	Percentage of Total Cases
University of Michigan	10/26-11/2/43	Vaccinated	888	0	5	2	6	7	20	2.29	21
		Control	888	8	17	36	5	8	74	8.51	79
		Total	1,776						94		

First case on 11/12/43 was not in study group.

TABLE 4.—*Results in Group 4: University of Minnesota, Minneapolis*

E. R. Rickard, M.D., Minnie Thigpen, B.S., and James H. Crowley, B.A.. Influenza Laboratory, Division of Preventable Diseases, Minnesota Department of Health, Minneapolis. This study was aided by a grant from the International Health Division of the Rockefeller Foundation.

Epidemic period: 11/21/43-12/13/43.

Diagnosis: Reporting to sick call with respiratory illness and admitted with temperature of 99 F. or more.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 11/27	12/4	12/11	12/18	Total Cases	Incidence, per Cent	Percentage of Total Cases
University of Minnesota	11/5-11/13/43	Vaccinated	599	7	4	4	1	16	2.69	22.5
		Control	607	35	10	7	3	55	9.06	77.5
		Total	1,206					71		

Cases of influenza were not noted in any dormitory housing inoculated students until at least eleven days after vaccination of the group housed in that dormitory.

An epidemic of influenza A was first identified in the Middle West about the second week in November. The disease was subsequently recognized in other localities within a short time thereafter. The epidemic period in the posts under observation was three to four weeks. The disease was, in general, mild, of three to four days' duration and with a low incidence of complications.

The accompanying data represent tabulations of cases called influenza at the time of illness. The designation cent, while in the 6,263 receiving vaccine there was an incidence of 2.22 per cent, a ratio of 3.2 to 1.

The significance of the results is heightened by the uniformity of trend in practically all instances. The two greatest deviations are noted in the medical school units and in California. In the former the low incidence of the disease is thought to be related to the lack of central reporting. In the latter instance there is no clear difference between control and vaccinated groups; various factors such as furlough, the increased interval since

TABLE 5.—*Results in Group 5: University of Iowa, Iowa City*

William M. Hale, M.D., with technical assistance of Mr. Earl J. Gifford. Department of Bacteriology, University of Iowa, Iowa City.

Epidemic period: 11/29-12/25/43.

Diagnosis: Cases with diagnosis of influenza, most all with temperatures of 100 F. or more.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 12/11	12/18	12/25	1/1/44	Total Cases	Incidence, per Cent	Percentage of Total Cases
University of Iowa.....	12/2-12/4/43	Vaccinated	599	(9) 3	2	4	2	11	1.83	21
		Control	599	(11)12	16	11	1	40	6.67	79
		Total	1,198					51		

Five cases before vaccination completed. Summarized totals exclude the cases occurring in the first five days following vaccination. Numbers in parentheses indicate those occurring in the first five days. Hemolytic streptococcus pharyngitis occurred concurrently with the outbreak of influenza. Twenty per cent of throat cultures were positive for B. hemolytic streptococcus.

TABLE 6.—*Results in Group 6: University of California, Berkeley*

Monroe D. Eaton, M.D., and Gordon Meiklejohn, M.D. Research Laboratory of the California Department of Public Health, Berkeley, Calif. This study was aided by a grant from the International Health Division of the Rockefeller Foundation.

Epidemic period: 11/26/43-1/15/44.

Diagnosis: All cases hospitalized with acute febrile respiratory disease.

Unit	Date Vaccinated	Number in Study		Cases by Weeks Ending 12/3	12/10	12/17	12/24	12/31	1/7/44	1/15	Total Cases	Incidence, per Cent	% of Total
University of California.....	10/19-10/27/43	Vaccinated	457	1	1	5	8	4	1	4	24	5.25	41
		Control	435	3	1	10	5	3	4	8	34	7.81	59
		Total	892								58		

About 10 cases of streptococcic infection including 2 with scarlet fever occurred during the influenza epidemic.

The unit was on furlough 12/4 to 12/12/43. A few were away 12/22 to 12/28/43.

TABLE 7.—*Summary of Clinical Evaluation of Vaccination Against Influenza*

The combined totals of all results.

Group	Service Command	ASTP Unit	Dates of Vaccinated	Total Number	Number of Subjects: Vaccinated	Number of Subjects: Control	Number of Cases: Vaccinated	Number of Cases: Control	Incidence, per Cent: Vaccinated	Incidence, per Cent: Control	Percentage of Total Cases: Vaccinated	Percentage of Total Cases: Control
1	2d	Cornell.....	11/9	982	498	484	15	43	3.01	8.86	26	74
	2d	N. Y. Med. Schools	10/26-11/4	1,953	976	977	14	33	1.43	3.38	30	70
2	2d	Princeton.....	11/2	1,150	590	560	17	46	2.88	8.20	27	73
	2d	Rutgers.....	11/1	1,212	606	606	7	42	1.15	6.93	14	86
	2d	C. C. N. Y.....	11/19	2,105	1,050	1,055	14	75	1.33	7.10	16	84
3	6th	Michigan.....	10/26-11/2	1,776	888	888	20	74	2.25	8.35	21	79
4	7th	Minnesota.....	11/5-11/13	1,206	599	607	16	55	2.68	9.06	22	78
5	7th	Iowa.....	12/2-12/4	1,198	599	599	11	40	1.83	6.67	21	79
6	9th	California.....	10/19-10/27	892	457	435	24	34	5.25	7.80	41	59
Totals.....				12,474	6,263	6,211	138	442	2.22	7.11	23.8	76.2

has been made purely on clinical grounds without reference to serologic or other virus studies for identification of individual cases. The division according to vaccinated or control was not done until the epidemic period was thought to have been passed. The results for the respective units were compiled by the investigating teams and, in all but 1 instance, a report was submitted to the Office of the Surgeon General of the Army before the evidence obtained in other locations was known.

It is seen that the incidence of clinical influenza in the 6,211 men receiving control material was 7.11 per vaccination and the protracted incidence of disease may be involved, but no single explanation is offered at present. When these two pronounced deviations are excluded, the ratio of influenza in controls to influenza in vaccinated is 4 to 1. In some of the units, ratios of 5 or 6 to 1 were recorded.

It is of interest to note also that, in general, the difference between vaccinated and control individuals was greatest at the height of the epidemic curve and as the epidemic subsided the differential was less marked.

The results at the College of the City of New York and at Iowa, where vaccination was begun after the

epidemic was in progress, indicate that the effect of vaccine becomes evident in about one week after inoculation. In these instances the attack rates in the vaccinated and controls were not especially different during the first week but then diverged sharply. The duration of the effect is not known.

In this brief report no consideration is given to the results of serologic and virus studies which are under way and which will be incorporated in a subsequent complete report.

SUMMARY

The influence of subcutaneous inoculation of a concentrated inactivated vaccine on the incidence of clinical influenza in a series of Army Specialized Training Program units comprising approximately 12,500 men was studied during the recent epidemic of influenza A. Vaccination done shortly before or even after the onset of the epidemic was found to exert a protective effect with a total attack rate of 2.22 per cent among the 6,263 vaccinated and 7.11 per cent among the 6,211 controls, a ratio of 1 to 3.2. The influence of vaccine was most clearly evident at the height of the epidemic prevalences. The duration of the effect has not been determined.

Office of the Influenza Commission, School of Public Health, University of Michigan, Ann Arbor, Mich.

Council on Foods and Nutrition

ACCEPTED FOODS

THE FOLLOWING ADDITIONAL FOODS HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON FOODS AND NUTRITION OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO ACCEPTED FOODS.

GEORGE K. ANDERSON, M.D., Secretary.

PREPARATIONS USED IN THE FEEDING OF INFANTS (*See* Accepted Foods, 1939, p. 156).

Beech-Nut Packing Company, Inc., Canajoharie, N. Y.

BEECH-NUT BRAND STRAINED VEGETABLES AND BEEF, WITH RICE AND BARLEY.

Analysis (submitted by manufacturer).—Total solids 13.95%, moisture (by difference) 86.05%, ash 1.25%, fat (ether extract) 0.56%, protein (N × 6.25) 2.91%, crude fiber 0.48%, carbohydrates other than crude fiber (by difference) 8.75%, calcium (as Ca) 0.03%, phosphorus (as P) 0.04%, iron total 7.8 parts per million, iron total available 7.3 parts per million, copper 3.1 parts per million.

Calories.—0.52 per gram; 14.74 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED APPLE SAUCE.

Analysis (submitted by manufacturer).—Total moisture 85.49%, total solids 14.51%, total ash 0.32%, nitrogen 0.02%, protein (N × 6.25) 0.12%, crude fiber 0.46%, fat (ether extract) 0.02%, salt (as NaCl) 0.18%, total carbohydrates (by difference) 13.59%, calcium 2.18 mg. per hundred grams, copper 0.218 mg. per hundred grams, iron 0.30 mg. per hundred grams, phosphorus 6.22 mg. per hundred grams, lead 0.64 part per million.

Calories.—0.55 per gram; 15.62 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED BEETS.

Analysis (submitted by manufacturer).—Total solids 10.25%, total moisture 89.75%, total ash 1.29%, nitrogen 0.163%, protein 1.02%, crude fiber 0.478%, fat 0.004%, carbohydrates (by difference) 7.458%, calcium 17.36 mg. per hundred grams, copper 0.145 mg. per hundred grams, iron 1.065 mg. per hundred grams, phosphorus 34.76 mg. per hundred grams.

Calories.—0.34 per gram; 9.63 per ounce.

Libby, McNeill & Libby, Chicago.

LIBBY'S BRAND HOMOGENIZED PEACHES.

Analysis (submitted by manufacturer).—Total solids 15.22%, total ash 0.33%, total moisture 84.78%, nitrogen 0.07%, protein (N × 6.25) 0.44%, crude fiber 0.34%, fat 0.01%, carbohydrates (by difference) 13.17%, salt (as NaCl) 0.15%, calcium 5.5 mg. per hundred grams, copper, 0.20 mg. per hundred grams, iron 1.01 mg. per hundred grams, phosphorus 20.40 mg. per hundred grams.

Calories.—0.58 per gram; 16.55 per ounce.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

AUSTIN E. SMITH, M.D., Secretary.

TYROTHRICIN.—An extract, first isolated by Dubos, obtained from Bacillus brevis, a gram-positive, aerobic, spore-forming soil organism. Tyrothricin possesses antibacterial action against several species of gram-positive organisms.

Actions and Uses.—Tyrothricin consists of at least two substances, gramicidin and tyrocidin, the former agent being by far the more active component. It seems not unlikely that some of the earlier reports which were claimed to be based on the use of gramicidin were actually concerned with the mixture. Included in the organisms that show some degree of susceptibility are species of pneumococci, streptococci and staphylococci. Its action on bacteria appears to consist, at least in part, of inhibiting enzymatic action, retarding growth and causing lysis of the bacteria against which it is effective. Its standardization is determined at present by the protection afforded mice infected with pneumococci administered intraperitoneally.

Tyrothricin should be applied locally. It is ineffective when administered orally and is ineffective *and dangerous* when given intravenously. It has been reported to be of value in the treatment of superficial indolent ulcers, the predominating organism of which is gram positive, mastoiditis, empyema and some other wound infections. Its field of usefulness is limited and it appears to exert no effect unless it can come in direct contact with the organisms. Thus it may not exert much effect in the presence of deep-seated infections. Body fluids such as saliva, urine and serum offer a slight inhibiting action, whereas substances from gram-negative organisms are decidedly inhibiting.

It may be used with caution in body cavities as long as there is no direct connection with the blood stream. But in no instance should proper surgical treatment be ignored when it is indicated. It should be remembered that, although tyrothricin appears to have a field of usefulness in medicine, its use is still in an experimental stage and much work remains to be done before its true status is established and final comparisons can be made with other antibiotics and anti-infective agents in general.

Dosage.—Tyrothricin must be applied locally, *not intravenously or by mouth.* It is administered after diluting with sterile distilled water to form an isotonic solution in a concentration which yields 500 micrograms of the drug per cubic centimeter. This concentration is usually effective against the infecting organism, although higher concentrations may be used if indicated. However, higher concentrations may be irritating to the tissues.

SHARP & DOHME, INC., PHILADELPHIA

Tyrothricin Concentrate: 1 cc. ampul of a solution of tyrothricin, 25 mg. per cubic centimeter, accompanied by a vial containing 49 cc. of sterile distilled water which contains phenylmercuric borate in a concentration of 1: 50,000; 20 cc. ampul of a solution of tyrothricin, 25 mg. per cubic centimeter, not accompanied by a diluent.

ESTROGENIC SUBSTANCES (See New and Nonofficial Remedies, 1943, p. 401).

The following additional dosage form has been accepted:

THE SMITH-DORSEY COMPANY, LINCOLN, NEB.

Ampul Solution of Estrogenic Substances (in sesame oil) with Benzyl Alcohol 3%: 10 cc. Each cubic centimeter contains the equivalent of 20,000 international units of estrone. Three per cent benzyl alcohol added as a preservative.

THEOPHYLLINE ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1943, p. 356).

The following dosage form has been accepted:

CHEPLIN BIOLOGICAL LABORATORIES, INC., SYRACUSE, N. Y.

Ampul Solution Aminophylline: 0.48 Gm. in 2 cc. and 0.24 Gm. in 10 cc.

VIOFORM (See New and Nonofficial Remedies, 1943, p. 121).

The following additional dosage form has been accepted:

CIBA PHARMACEUTICAL PRODUCTS, INC., SUMMIT, N. J.

Vioform Insufflate: 8 ounce bottles.

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SATURDAY, APRIL 1, 1944

DIETARY DEFICIENCY AND POLIOMYELITIS

Clinicians generally agree that a deficiency in vitamins or other essential food elements usually results in a lowered natural resistance to bacterial infections. There is reason to believe that this hypoimmunity is largely due to a reduction in phagocytic functions.[1] In contrast with this general agreement the effect of similar nutritional deficiencies on antiviral resistance is still controversial. McCormick,[2] for example, reported that the diets of victims of infantile paralysis are frequently low in thiamine. He obtained good results in paralytic cases by administering rather large amounts of thiamine. Exactly opposite conclusions were drawn by Ward,[3] who found that thiamine excretion in children with paralytic poliomyelitis does not differ from that of normal children. He believes that thiamine nutrition is not a determining factor in poliomyelitis.

Similar contradictions have resulted from a study of experimental poliomyelitis. Working with monkeys, Jungeblut[4] found that the incidence of paralysis could be reduced by the administration of rather large doses of vitamin C, while Sabin[5] could not obtain protection from vitamin C therapy. Toomey[6] found that vitamin D gave almost complete protection when the infective dose of poliomyelitis virus was injected directly into an exposed loop of the intestine of monkeys. Sabin[7] found that vitamin D did not afford protection under similar conditions and that rachitic monkeys are not more susceptible to experimental poliomyelitis than normal controls.

A new basic theory of the relationship of nutritional factors to virus infection was suggested by Rivers,[8] Sprunt[9] and others, who found that rabbits on a starvation diet are more resistant to vaccinia virus than adequately fed controls. Bloomfield and Lew[10] found that vitamin B deficiency protected animals against spontaneous ulcerative cecitis, which was prevalent in their laboratory among animals on adequate diets. Rasmussen[11] and his associates of the University of Wisconsin applied this new lead by testing the effects of thiamine deficiency on resistance to poliomyelitis in mice. One group of 35 mice was maintained on a thiamine deficient diet, with 35 controls fed at the presumably optimum thiamine level. Both groups were inoculated intracerebrally with 0.03 cc. of a 2 per cent suspension of Lansing mouse passage poliomyelitis virus. By the fourteenth day 25 of the mice maintained at the optimal thiamine level had developed paralysis. None of the mice on the thiamine deficient diet showed paralytic symptoms. Thiamine deficiency therefore apparently conferred an almost complete poliomyelitis immunity.

This seeming paradox is currently studied in greater detail by Foster and her associates[12] of the Department of Pediatrics, University of Pennsylvania School of Medicine. In a typical experiment two groups of mice were placed for twenty days on diets differing only in thiamine content. The control diet contained 100 mg. of thiamine per hundred grams of food, while the deficiency diet contained but 10 mg. of thiamine per hundred grams. This amount was increased slightly with the onset of signs of thiamine deficiency. Of 79 mice on the high thiamine diet, 60 (75 per cent) developed paralysis by the twenty-first day after intracerebral inoculation with a ten to one hundred 50 per cent mortality dose of the Lansing strain of poliomyelitis virus. Of 77 mice on the thiamine deficient diet only 7 (9 per cent) showed signs of paralysis. Both mortality rate and incidence of paralysis were much lower in the vitamin deficient group.

Since one of the characteristics of thiamine deficiency is loss of appetite with a concomitant decrease in consumption of food, the effect of a simple restriction of daily food intake was tested on 276 mice. Each animal on the restricted diet was given 1 Gm. of food daily, which is about 40 per cent of the normal food consumption. In many of the groups extra thiamine was given in the restricted diet to compensate for thiamine deficiency. The results were similar to those obtained with the earlier thiamine deficient groups. Restriction of caloric intake resulted mainly in a delayed development of paralysis, with a slighter reduction in mortality rate.

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As early as 1911 Rous [13] noted that undernourished chickens are relatively resistant to sarcoma virus. Tannenbaum [14] found that in mice restriction in such essential food components as proteins, vitamins, minerals or fats, as well as simple restriction of caloric intake, increases normal cancer resistance. Bischoff [15] found that in mice a deficiency in pyridoxine (B_6) produces a significant decrease in rate of growth of tumors. The immunizing effect of thiamine deficiency against poliomyelitis virus is thus not an isolated phenomenon but an immunologic reaction operative against other viruses and against tumor cells.

Several plausible theories to account for this phenomenon have been suggested by the Philadelphia pediatricians. Probably the simplest theory is the assumption that the vitamin and other nutritional requirements of a virus are greater or more exact than those of the bacterial cell, an intermediary position being occupied by the normal tissue cell. With a reduced vitamin or caloric intake the multiplication of the virus would first be inhibited without appreciable tissue starvation, giving a seeming increase in natural resistance. Further reduction in nutritional factors would reduce phagocytic activity without inhibiting the normal rate of bacterial growth, with a resulting real decrease in bacterial resistance. Work is being continued along lines suggested by these theories.

RECONDITIONING CONFERENCE AT SCHICK GENERAL HOSPITAL

A sound program for the reconditioning of disabled soldiers, recently announced by the Surgeon General of the Army, was given great impetus in a two day conference held at the Schick General Hospital, Clinton, Iowa, in March. Medical Corps officers and others in attendance were impressed by the scientific approach to the problem. An enthusiastic execution of a realistic reconditioning program during the past several months at Schick General Hospital by its commandant, Col. Dean F. Winn, M. C., and his staff clearly demonstrated the great possibilities of an early return to duty of many disabled soldiers. A first hand opportunity to observe the operation of the plan was afforded by the ward walks and demonstration clinics, and visiting officers were given every opportunity to interrogate patients, trainees, wardmasters, nurses, medical officers and others concerned with the program.

The presence of high ranking Army officers, representatives of the Office of the Surgeon General and members of the War Department General Staff was indicative of the vital interest of the Army in the successful operation of the plan. Emphasis is placed on the effort to utilize to the fullest extent possible the manpower of the Army. Major Gen. Ray E. Porter, assistant chief of staff, general staff, pointed out that the cream of the nation's crop of young manhood are now in the Army. Young men who will come to the medical department for reconditioning are for the most part trained soldiers who must be quickly restored to military duty or useful civilian occupations. "Every one of them you lose for the Army, every day that one of them remains away from duty longer than is absolutely necessary to his full recovery, is a damning charge against all of us and an irreparable loss to our cause."

Reconditioning, though not a new concept to physicians, has been carefully planned to include all phases of the problem. Last year the Surgeon General, after a thorough study of the problem, created a new division in his office, the Reconditioning Division, and appointed Col. Augustus Thorndike, M. C., as its director. Colonel Thorndike was formerly physician to Harvard, where he had practical experience with athletes. He is the author of a well known book dealing with the care of injuries of athletes and is singularly fitted for the new post. Training for men to be returned to duty as the result of the reconditioning program includes physical reconditioning, educational reconditioning and emotional reconditioning. Physical exercises are begun at the earliest possible time. In many instances they are done while the patient is still in bed; however, in every case they are prescribed by the medical officer in charge of the ward. Strict supervision of the program is maintained by medical officers of the professional services who are responsible for the care of the soldiers. Much of the physical training program is carried out by nonprofessional officers and enlisted men under the direction of medical officers. A graduated system of calisthenics, drills, games and military training is the basis of physical reconditioning. Concurrently, equally well planned programs for educational and emotional reconditioning are carried out by competent personnel. Not only is the disabled soldier to be returned to duty wherever possible physically fit, but the program also calls for such reconditioning as will return him "a tough, seasoned soldier with an aggressive combat spirit."

Here is a challenge to the medical profession to restore as many of the nation's sick and wounded soldiers to duty as early as possible. Sound practical plans including competent personnel and adequate materials have been authorized. The ultimate success of the plan, however, rests with the individual medical officer, whose judgment in each soldier's welfare should rest on accepted scientific principles.

13. Rous, P.: J. Exper. Med. **13**: 397, 1911.
14. Tannenbaum, A.: Am. J. Cancer **38**: 335, 1940; Cancer Res. **2**: 460, 1942.
15. Bischoff, F.; Ingraham, L. P., and Rapp, J. J.: Influence of Vitamin B_6 and Pantothenic Acid on Growth of Sarcoma 180, Arch. Path. **35**: 713 (May) 1943.

SYMPATOL-STEARNS—A TRIUMPH OF MEDICAL MISINFORMATION FOR PHYSICIANS

In recent issues of some pharmaceutical and medical periodicals—not too careful about the scientific evidence in support of the claims made—advertisements with the caption "A Standby of European Physicians Comes to America—Sympatol, a *Safe* Circulatory Stimulant." Embellishing this statement is an artistic presentation of a schematic world map with a broad arrow emanating from a point due west of the Rock of Gibraltar somewhere in the Atlantic Ocean and ending above "Sympatol." Below this broadside the reader is informed in part:

> With the presentation of this renowned European professional product, Stearns fills a widely recognized need of American medicine. For Sympatol is a *safe* circulatory stimulant—free from adverse side reactions on heart and nerves.
>
> As attested by twenty years' experience of leading continental doctors, the bracing, prolonged, tonic effects of Sympatol may be safely employed—*with marked benefits*—in nearly all cases of low blood pressure . . . during convalescence from colds and "flu" . . . in hypothyroidism and the menopause . . . for "toning up" pale, listless children. This abbreviated list will indicate why Sympatol is regarded, in Europe, as almost indispensable.

If the advertising is to be believed, the "Indications suggesting this circulatory stimulant cover all general debilitated states, which include patients convalescing from colds and 'flu,' 'arrested' tuberculosis, women in the menopause, listless rundown children, hypothyroids and similar conditions."

Now the simple plain fact is that Sympatol has been known on the American continent for many years. In 1929 Frederick Stearns & Company presented "paramethylamino-ethanolphenol hydrochloride" to the Council on Pharmacy and Chemistry as Sympatol. Subsequently (1930) the Council voted to accept Sympatol with certain provisions, not under this name but under the term Synephrin. Shortly thereafter the firm presented Synephrin Tartrate, described as "the normal tartrate of the synthetic alkaloid Synephrin, *p*-hydroxyphenylmethylaminoethanol." It will be noted that the latter chemical designation indicates the same base as that which originally bore the name Sympatol. In 1933 the Council gave consideration to a product of Frederick Stearns & Company named Neo-Synephine, one chemical name for which was stated to be "levo-m-methylaminoethanolphenol hydrochloride"; this product was claimed to represent an improvement over the previously accepted product. The Council voted to accept Neo-Synephrine Hydrochloride for inclusion in New and Nonofficial Remedies and published a statement which appears in the Annual Reports of the Council on Pharmacy and Chemistry, 1934, to the effect that Synephrin Tartrate had been omitted from New and Nonofficial Remedies, but the firm was going to conduct investigations to "ascertain whether or not it [Synephrin Tartrate] is of clinical value in the treatment of cardiovascular disorders." The current advertising for Sympatol obviously omits reference to the fact that the product was available on the American market over ten years ago. The reader is led to believe that he is offered something new, something wonderful, something that has been the standby of European medicine. He is also led to believe that this product has been established as a stimulant for a wide variety of conditions; the Council has not received any evidence in substantiation since 1933.

Current Comment

MEDICAL TESTIMONY IN MINNESOTA

Three years ago the Minnesota State Medical Association created a Committee on Medical Testimony to which courts and others may refer instances in which physicians have given questionable medical testimony. The committee, after investigation and if the facts warrant it, may censure the physician, may publicize the circumstances of the particular case or may bring the matter to the attention of the state board of medical examiners for disciplinary action. This experiment has been watched with interest by all who are concerned with finding solutions to the problem of medical expert testimony. Recently the Committee on Medical Testimony referred to the board of medical examiners the case of a physician who had testified as an expert witness for an accused charged with murder. Both the committee and the board concluded that the testimony in question was unjustified. The board found, however, that neither perjury nor monetary gain was a factor in the giving of the testimony, and for that reason the license of the physician was not suspended or revoked. He was censured. In reaching its decision in this case, the board said:

> This board is of the opinion that no physician has a right to practice medicine just as he pleases, nor to testify in court in a similar fashion. We believe that a physician's testimony should be based upon a factual background that has been carefully scrutinized by the physician before he expresses his opinion. This opinion should be reasonable and surrounded by every mark of truthfulness and sincerity. Under those circumstances the opinion is of value to courts and juries alike. The scrutiny required is all the greater where the defendant is on trial for murder and the history of any physical or mental abnormalities is furnished by the defendant or some one close to him.

Next to saving life and giving aid to the sick and injured no greater responsibility devolves on the medical profession than giving testimony in court or elsewhere. The right of a physician to continue in the practice of medicine is measured not only by his professional competence as a physician but also by what he says and does as a physician.

EFFICACY OF VACCINATION AGAINST YELLOW FEVER

Previous investigations have shown that mass vaccination of human beings against yellow fever with the attenuated strain of yellow fever virus known as 17D is an effective method of producing immunity. This virus has become available for widespread clinical trial comparatively recently, and only now is the duration of immunity attained susceptible of evaluation. Bugher and Gast-Galvis,[1] who studied the efficacy of yellow fever vaccination in Colombia, report that there has been only 1 recognized case of yellow fever among over 600,000 persons vaccinated with the 17D strain. A boy had been inoculated only five days before becoming ill; consequently he was apparently in the incubation period of the disease at the time of inoculation and could not have been expected to produce demonstrable antibodies in time to ward off the disease. In contrast to this extraordinary record, 198 proved and 45 probable cases were recognized among unvaccinated persons from 1937 to 1943, the former year being that in which vaccination was begun. A large number of these cases, furthermore, occurred in known endemic areas in which over 90 per cent of the population had been vaccinated. These observations are crucial: yellow fever continued to appear in the small unvaccinated fraction while disappearing among those inoculated. Cases of the disease were continuing to appear in the unvaccinated minority during 1941 and 1942. On clinical grounds it can be concluded, therefore, that effective immunity from vaccination with the 17D strain persists for at least four years. Since there has not been any clinical evidence of a break in the protection at the end of four years, immunity will probably continue for an unknown further period.

1. Bugher, John C., and Gast-Galvis, Augusto: The Efficacy of Vaccination in the Prevention of Yellow Fever in Colombia, Am. J. Hyg. **39**: 58 (Jan.) 1944.

ROCKEFELLER FOUNDATION IN 1943

Especially noteworthy in President Fosdick's review[1] of the work of the Rockefeller Foundation in 1943 is the part played by the foundation's grants in the development of penicillin. Thus it is reported that grants have been made since 1936 to Dr. H. W. Florey at Oxford for investigations to be carried out by him and his colleagues on this substance. The foundation has given uninterrupted support to Svedberg's work on proteins at the University of Uppsala and to Runnström's research in chemical physiology and embryology at the University of Stockholm. In Switzerland the foundation has made grants for research in biochemistry, biophysics and neurophysiology. Keeping alive the flame is an uphill fight, however; as Fosdick says, "Laboratories surrounded by barbed wire are ugly monuments to the intellectual and moral distortion of our times." Other matters of importance discussed in this report deal with the return of the gambiae mosquito to Brazil—apparently brought by plane from Accra and Dakar in Africa to Natal—the reopening of the foundation's laboratory in Lagos, West Africa, for the study of the epidemiology of yellow fever, and vitally important investigations on typhus. Scientific as well as personal tragedy is abroad in the world: At the fall of Manila the Japanese looted the foundation's office and destroyed all records; in China Dr. Henry S. Houghton, director of the Peiping Union Medical College, and Mr. Trevor Bowen, its comptroller, are still imprisoned with little hope for their early return, while the buildings of the college have been taken over by the military and the greater part of their contents removed. When return to the blacked out areas of the world is again possible, the Rockefeller Foundation will doubtless appear in the forefront of the agencies seeking to restore the bases of civilization.

1. Fosdick, Raymond B.: The Rockefeller Foundation: Review of Work in 1943.

U. S. P. VITAMIN MIXTURES

The value of vitamin mixtures in multiple vitamin deficiencies is well established. Numerous communications have provided much information on the administration of these mixtures; the Council on Pharmacy and Chemistry has outlined the type of mixtures[1] that will be found acceptable for inclusion in New and Nonofficial Remedies. Two such vitamin mixtures, Hexavitamin and Triasyn B in capsules and tablets, are described in the first bound supplement to U. S. P. XII. Hexavitamin contains vitamin A from natural (animal) sources, vitamin D from natural (animal) sources or as activated ergosterol or activated 7-dehydrocholesterol, ascorbic acid, thiamine hydrochloride, riboflavin and nicotinamide. Triasyn B consists of thiamine hydrochloride, riboflavin and nicotinamide. For those who desire therapeutically effective vitamin mixtures not disguised by a multiplicity of nonrevealing and frequently therapeutically suggestive names, Hexavitamin and Triasyn B are important additions to U. S. P. XII. The next step will be for the physician to prescribe such compounds for his patients so that they may be obtained from the pharmacist.

1. The Proper Use of Vitamins in Mixtures, a Report of the Council on Pharmacy and Chemistry and Council on Foods and Nutrition, J. A. M. A. **119**: 948 (July 18) 1942.

RABID FOXES IN MARYLAND

According to newspaper report, rabies has broken out in near epidemic proportions among foxes in Maryland. In several cases rabid foxes have attacked human beings: a railroad trainman, a farmer and a bus driver have been specifically mentioned. Twelve soldiers at Fort Meade, Maryland, were given treatment for the prevention of rabies after one of the post's puppy mascots had been infected. The state game warden has declared an open season on fox hunting, subject to the local laws in eleven counties which have regulations protecting these animals. In this case the ancient sport of fox hunting and public health prophylaxis seem to go hand in hand.

MEDICINE AND THE WAR

In this section of The Journal each week will appear official notices by the Committee on War Participation of the American Medical Association, announcements by the Surgeons General of the Army, Navy and Public Health Service, and other governmental agencies dealing with medicine and the war, and such other information and announcements as will be useful to the medical profession.

MILITARY MOBILIZATION AND TUBERCULOSIS CONTROL

Colonel Esmond R. Long
MEDICAL CORPS, ARMY OF THE UNITED STATES

Captain Charles F. Behrens
MEDICAL CORPS, U. S. NAVY

Colonel Roy A. Wolford
MEDICAL CORPS, ARMY OF THE UNITED STATES, VETERANS ADMINISTRATION

Senior Surgeon Herman E. Hilleboe
U. S. PUBLIC HEALTH SERVICE

Colonel Leonard G. Rowntree
MEDICAL RESERVE, SELECTIVE SERVICE SYSTEM

The current military mobilization, which requires preinduction physical examination, has furnished a unique opportunity to promote national tuberculosis control. The following paragraphs indicate the manner in which advantage is taken of the opportunity through the combined efforts of the Selective Service System, the Army, the Navy, the U. S. Public Health Service and the Veterans Administration.

REJECTION FROM MILITARY SERVICE

In normal procedure men selected through the operation of the Selective Service System are sent to an armed forces induction station, jointly controlled by the Army and Navy, where they are given a physical and x-ray examination of the chest in the course of a complete physical examination. X-ray examination is ordinarily by the method of photoroentgenography, with stereoscopic 4 by 5 inch films; whenever there is reason, however, to supplement this rapid method by further x-ray observation, examination with full size films is made.

The standards for acceptance for military service are specified in Army and Navy regulations. They require exclusion of all active tuberculosis, and all latent tuberculosis that might be reactivated under military conditions. They permit acceptance of small well scarred tuberculous lesions, limited to densely calcified residues of childhood disease, or minimal strandlike remains of tuberculosis of reinfection type after repeated examination has indicated stability of the lesion. Men who fail to meet the standards are rejected, and notification of the cause of rejection is made on the Selective Service System form (DSS Form 221) accompanying each man. Men who meet the standards are forwarded at a later date to an Army reception center or Navy training station for induction and military duty.

FOLLOW-UP OF REJECTED MEN

The Selective Service System has taken measures to refer men rejected for tuberculosis to state public health agencies for follow-up with a view to isolating open cases, finding new cases among contacts and instituting suitable supervision of all contacts. The first steps in this direction were made in May 1942, when the director of the Selective Service System issued instruction to all local boards making provision whereby x-ray films of men rejected for military service because of nonremediable chest disease could, within the discretion of the state director of the Selective Service System, be delivered to state health officers for public health purposes. Subsequent arrangements for reporting cases of tuberculosis and at the same time furnishing the films of rejected men to the state health departments were made in many states.

A review of the degree of cooperation a year later, i. e., in May 1943, by the Tuberculosis Control Section of the U. S. Public Health Service brought out the fact that state health departments in forty-seven of the forty-eight states and in the District of Columbia were provided with at least the names and addresses of men rejected because of tuberculosis. Twenty-four of the states received the chest x-ray film on which rejected was based, in addition. As a rule reports and films are sent from state Selective Service System headquarters directly to the state health department.

In twenty-five of the forty-eight states and in the District of Columbia at the time the review was made follow-up on the cases reported was recorded by the state health officers as complete. In twenty-one states only partial follow-up was practiced. In the remaining states arrangements for follow-up had not been made. The chief reason given for inadequacy or failure of follow-up was shortage of local personnel. In numerous states the state and county affiliates of the National Tuberculosis Association have performed effective service in supplementing the work of the state and city health departments.

In this connection it is worth pointing out that in the face of personnel shortage effective review and follow-up of cases can be made only through definite organization of those interested in the field. It is believed that an adequate survey within states will reveal additional assistance which can be coordinated by county health officers into successful working teams.

REVIEW BOARDS

In many of the states, at the present time, state headquarters of the Selective Service System have established review boards for the verification of diagnosis in men rejected for tuberculosis, with a view to reconsideration of inactive cases in which the evidence for final rejection is not convincing. The review system varies in different states, but as a rule it involves study of films and pertinent clinical facts by a board or boards of tuberculosis and x-ray specialists, and recommendation, through appropriate channels, of needed medical care in the case of men with active or potentially active disease and of resubmission of men by local boards to induction stations in the case of registrants who are, in the judgment of the board, able to perform military service. In the latter case the procedure is the same as in the original appearance of the man concerned. He is again examined at an armed forces induction station and may be accepted or again rejected, according to the decision of the induction station examining board. When the lesion is of "borderline" character, men are frequently accepted on the basis of the fortification of opinion furnished by the review board's recommendation.

In some states review boards other than those constituted through Selective Service System action have been established by special arrangement between the induction station and chest specialists in the local medical profession. Through these boards the same purposes are accomplished.

CASE FINDING IN THE ARMED FORCES

Case finding does not stop with the preinduction x-ray examinations. The latter have not been perfect, and a certain number of cases of active tuberculosis have failed to be detected by the induction station examination. There are various reasons. The volume and necessary speed of the examinations are in large part responsible. The failure to exclude all cases has been a cause of serious concern in the Army and Navy, and appropriate arrangements for avoiding all possible errors have been made. These appear increasingly effective.

Experience has shown that a large proportion of the tuberculous cases missed at the induction stations are discovered within the first few months of service, before substantial change has taken place in the extent of the disease. These cases are found in the course of certain required physical examinations, as in Officer Candidate Schools or in hospitals in the course of general or special physical examination.

Active cases discovered in the Army and Navy receive initial treatment in station and general hospitals, but, since active tuberculosis disqualifies for any form of military service, enlisted men are generally discharged at an early date to the Veterans Administration. Special arrangements for longer care are at present in effect at Fitzsimons General Hospital for commissioned officers, noncommissioned officers of the first three grades and enlisted men nearing twenty years of service in the Army, and for certain Navy personnel.

Of the millions of men called for military service or appearing for voluntary enlistment in the last three years the great majority have had a chest x-ray examination. Figures have not yet been released on the total number rejected at recruiting and induction stations. The rate has varied slightly with minor changes in regulations. During the first part of 1943 the rejection rate for tuberculosis was approximately 1.4 per cent.

Through the close cooperation here described between the armed forces induction stations, state and local Selective Service units and state and county health departments, an effective program is being developed for rejectees which should save many individual lives and have far reaching effect on the control of tuberculosis.

The system in operation also ensures that men whose lesions escaped detection before induction and men who develop new tuberculosis in the armed services will sooner or later be discovered. As indicated in the preceding paragraphs, detection is frequent in the early months of service. Chest x-ray examination at discharge, required in both the Army and the Navy, enables discovery of those whose lesions were not detected earlier.

CARE BY VETERANS ADMINISTRATION

With rare exception all soldiers and sailors discharged from service by reason of tuberculosis are entitled to care at the hands of the government. Up to Dec. 31, 1943 the Veterans Administration had adjudicated the claims of 4,858 enlisted men who entered service in the Army, Navy, Marine Corps or Coast Guard after the declaration of a national emergency on Aug. 17, 1940 and were discharged from service because of tuberculosis. In 2,838, or 58.4 per cent, of these cases claim for disability pension was allowed. The 2,838 allowed cases were divided as follows: Army 87.2 per cent, Navy 10.4 per cent, Marine Corps 1.5 per cent, Coast Guard 0.9 per cent. Regardless of decision as to service connection of the lesion and claim for pension, soldiers and sailors are eligible for care in veterans facilities in accordance with Public Law 10, 78th Congress, enacted March 17, 1943, which provides that any person serving in the active military or naval service of the United States between Dec. 7, 1941 and the termination of hostilities of the present war and not dishonorably discharged will obtain at discharge the status of a "veteran of any war" and thus be eligible for hospitalization as a beneficiary of the Veterans Administration. The Veterans Administration maintains thirteen tuberculosis hospitals and additional beds for tuberculosis in twenty-six general hospitals. On Jan. 31, 1944 a total of 6,114 beds were available for tuberculous veterans, including those of World War I.

COOPERATION BETWEEN SERVICES

Continued improvement is being made in the separate phases of the program here outlined, to the end that maximum utilization may be made of the unusual opportunity for tuberculosis control. Through informal but efficient arrangement representatives of National Headquarters, Selective Service System, the Medical Corps of the Army, the Medical Corps of the Navy, the Tuberculosis Control Section of the U. S. Public Health Service and the Office of the Medical Director of the Veterans Administration meet at regular intervals to consider, recommend and effect improvements in this cooperative enterprise. The National Tuberculosis Association, National Research Council, the American Legion and other organizations are cooperating with these bodies in active measures for the education of men rejected or discharged from the military services by reason of tuberculosis, ensuring their understanding of the great importance of their own care and the necessity of preventing transmission of their disease to others.

ARMY

PENICILLIN TREATMENT OF RESISTANT GONORRHEA

Because of the adequacy of supplies of penicillin available to the Army, persons with sulfonamide resistant gonorrhea will not be transferred to general hospitals for treatment except when indicated by complications, according to the Technical Bulletin of Medicine, No. 16, issued by the War Department recently. Station hospitals should requisition any additional supplies of penicillin needed for this purpose from the nearest general hospital. Penicillin will be administered to persons with gonorrhea immediately after failure to respond to one course of a sulfonamide compound. There is still insufficient evidence to justify the use of penicillin in any of the venereal diseases other than gonorrhea, and it will not be used for such treatment except when specifically authorized by the Surgeon General.

CENTER FOR TREATMENT OF ARTHRITIS

A center for the diagnosis and treatment of arthritis has been set up at the Army and Navy General Hospital, Hot Springs National Park, Ark., the War Department recently announced. All patients with severe and prolonged arthritis to be treated by the Army will be sent to the hospital, which is specially equipped for treatment of diseases of the joints and has facilities for extensive physical therapy. Lieut. Col. Philip Hench, formerly of the Mayo Clinic, is in charge of medical service at the hospital. Dr. Hench is a leading specialist and an authority on diseases of the joints. While arthritis does not account for a large percentage of illnesses in the Army, it is found to be one of the most disabling.

FIRST AID, SANITATION AND PERSONAL ADJUSTMENT COURSES

Emphasizing that malaria, diarrheal diseases and neuropsychiatric disorders are each responsible for a large part of hospital admissions, the War Department has issued instructions that every officer, noncommissioned officer and enlisted man be given standard courses of instruction in first aid, sanitation and personal adjustment. Material for the personal adjustment courses for all ranks—a new topic in military education—is being distributed by the Surgeon General as rapidly as it can be prepared.

The commanding generals of the Army Ground, Air and Service Forces have been ordered to provide such inspections and tests as will assure the attainment and maintenance of the appropriate minimum standards of proficiency in first aid, sanitation and personal adjustment by all commissioned and enlisted personnel. At least one inspection and test will be made within the six months preceding the departure of a unit overseas.

The department has instructed that "appropriate command action" be taken in the cases of all officers and noncommissioned officers who do not attain the prescribed minimum standard of proficiency.

It has also been ordered that refresher courses in the three topics be given in all officer pools, at overseas replacement depots and in staging areas.

To attain the prescribed standards a thirty-three hour instruction course for enlisted men of the lower grades has been outlined. For noncommissioned officers and company officers a twenty-six hour course is outlined, designed to give such per-

sonnel a teaching knowledge of sanitation and first aid and to enable them to recognize signs and symptoms of poor mental health and to know the causes of mental breakdowns.

The thirty-three hour enlisted men's course will include twenty hours during which such phases of sanitation as personal hygiene, sex hygiene, mess sanitation, control of intestinal diseases, water purification, malaria control and the like will be covered; ten hours of first aid, and three hours of personal adjustment lectures, including personal adjustment problems, recognition and handling of emotions and feelings and a healthy point of view toward service life.

The twenty-six hour course is similar, twelve hours being given to sanitation, eight hours to first aid and six hours to personal adjustment lectures.

The War Department stated that the degree to which commanders of all echelons preserve the fighting strength of their units by maintaining the health of their men is a measure of their leadership ability. "The unit surgeon is a staff officer of essential importance," the department stated. "He is not provided for the sole purpose of administering to the sick and injured. His primary responsibility is to advise his commander how the personnel of the command can be kept physically and mentally well."

THREE OFFICERS OF NURSE CORPS AWARDED SILVER STAR

Three officers of the Army Nurse Corps were recently awarded the Silver Star, the first women in the history of the United States to receive that decoration, for heroism during action on the Fifth Army's Anzio-Nettuno beachhead in Italy. The awards were presented at a joint ceremony in Italy by Major Gen. John P. Lucas, U. S. Army, to 1st Lieut. Mary L. Roberts, Dallas, Texas, 2d Lieut. Elaine A. Roe, Whitewater, Wis., and 2d Lieut. Rita Virginia Rourke, Chicago. All three were cited for their coolness and efficiency during a concentrated shelling in February of a field hospital area. Nurses were killed and many among other military personnel were wounded, power lines were cut and doctors and nurses were forced to work by flashlight in the treatment and evacuation of the wounded.

The citation accompanying Lieutenant Roberts' award read as follows:

"Lieutenant Roberts exhibited exceptional coolness and outstanding leadership, reassured the nurses under her charge and encouraged and urged them to greater efforts. Despite the impairment of facilities and the prolonged shelling, the vital work at three operating tables was continued under the inspiration of her conduct and example.

"The actions of Lieutenant Roberts in a critical situation assured the uninterrupted continuation of activities and contributed in a large measure to the success of the operations. Her bravery and unfaltering devotion to duty and complete disregard for her own welfare are in the best traditions of the military service and reflect the highest credit on herself and the Army Nurse Corps."

The citation given jointly to Lieutenant Roe and Lieutenant Rourke read in part as follows:

"Working with flashlights, Lieutenant Roe and Lieutenant Rourke immediately began the orderly evacuation of patients while quieting others who had become alarmed and were attempting to leave their beds.

"Throughout the shelling, which included many air bursts, they exhibited remarkable coolness and courage and carried on with complete disregard for their own safety. The quick thinking, competence under unnerving conditions, and the loyal considerations of Lieutenants Roe and Rourke for the welfare of their patients, prevented confusion which might have been critical, and were an inspiration to the enlisted men working under their supervision."

Lieutenant Roberts is a graduate of Hillman Hospital School of Nursing, Birmingham, Ala. She entered the Army at Fort Sam Houston, Texas, May 19, 1942.

Lieutenant Roe is a graduate of Mary Thompson Women's and Children's Hospital, Chicago. She entered the Army Nov. 10, 1942 at Camp Grant, Ill.

Lieutenant Rourke is a graduate of Providence Hospital, Washington, D. C. She entered the Army Dec. 1, 1942 at Percy Jones General Hospital, Battle Creek, Mich.

LIEUT. COL. WILLIAM A. HUTCHINSON AWARDED LEGION OF MERIT

Lieut. Col. William A. Hutchinson, formerly of Texarkana, Ark., was posthumously awarded the Legion of Merit by the War Department "for exceptionally meritorious conduct in the performance of outstanding service as surgeon for the Eritrea Service Command from May 1942 to February 1943. The difficult and varied terrain in the area covered by this command created a diversity of climatic conditions which caused unusual health problems. Colonel Hutchinson established a highly efficient medical service for both military and civilian personnel, enforcing a rigid health control which was of great importance to the success of local operations. His work in the control of malaria, which was one of the most common health hazards, and his systematic sanitation of all water supply points were outstanding accomplishments. By his exceptional professional skill, untiring efforts and effective methods of operation, Colonel Hutchinson contributed in a marked degree to the successful operation of the United States Army forces in Eritrea." Dr. Hutchinson graduated from Tulane University of Louisiana School of Medicine, New Orleans, in 1924 and entered the service in May 1941. He was reported killed in an airplane crash Feb. 23, 1943.

BRIG. GEN. EUGEN G. REINARTZ RECEIVES THE JOHN JEFFRIES AWARD

Brig. Gen. Eugen G. Reinartz, commandant of the Army Air Forces School of Aviation Medicine, Randolph Field, Texas, was presented with the John Jeffries Award for 1943 recently. This honor is awarded by the Institute of Aeronautical Sciences "for outstanding contribution to the advancement of aeronautics through medical research." The award was presented by Major Gen. David N. W. Grant, air surgeon of the Army Air Forces. General Reinartz has had the longest continuous service of any medical officer assigned to the Army Air Forces, having known no other service in more than twenty-six years of military duty.

The award honors the memory of Dr. John Jeffries, an American physician, who with the French balloonist Blanchard made the first aerial voyage across the English Channel in 1785 and on a previous voyage made the earliest recorded scientific observations from the air. The award was established by the institute in 1940 to give recognition to the importance to aviation of scientific endeavor in the field of medicine.

ARMY NURSE CORPS

Lieut. Col. Ida W. Danielson, A. N. C., who was formerly in charge of personnel for the Army Nurse Corps, has assumed the post as director of nursing in the European theater of operations, succeeding Lieut. Col. Margaret E. Aaron, who has been returned to the United States because of illness. Succeeding Colonel Danielson as chief of nursing personnel is Major Nola Forrest, who for the past eight months has been in charge of nursing services in the California-Arizona Training Center.

FLIGHT SURGEONS' ASSISTANTS

A class of one hundred and twenty-one flight surgeons' assistants completed the six weeks course in aviation medicine at the School of Aviation Medicine, Randolph Field, Texas, March 6. Brig. Gen. Eugen G. Reinartz, U. S. Army, is commandant of the school.

ARMY PERSONALS

Dr. Midian O. Bousfield, formerly of Chicago, first Negro member of the Board of Education and former field medical director of the Rosenwald Foundation, has been promoted from lieutenant colonel to colonel.

Dr. Roscoe C. Giles, first Negro graduate of the Cornell University Medical College, New York, 1915, has been promoted from major to lieutenant colonel.

Dr. Bousfield graduated from Northwestern University Medical School, Chicago, in 1909. Both officers are serving at Fort Huachuca, Ariz.

Dr. Julius L. Sandhaus, who has been stationed in England for the past fourteen months, was recently promoted to the rank of lieutenant colonel. He graduated from Jefferson Medical College of Philadelphia in 1936 and entered the service as a first lieutenant in January 1941.

PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

THE SUPPLY OF INTERNS AND RESIDENTS

The failure of hospitals to take the steps necessary to obtain deferment of one third of the commissioned officers serving as interns who have been called to active duty for the month of April has produced a serious lag in the 9-9-9 Intern-Resident Deferment Program. The Directing Board of the War Manpower Commission's Procurement and Assignment Service for Physicians, Dentists, Veterinarians and Nurses has sent a letter to its state chairmen for physicians and to hospital superintendents calling attention to the seriousness of the situation.

The effects of this failure, the Directing Board maintains, may not be felt immediately, but by July 1 hospitals will feel seriously the results of failure to obtain the deferment from active duty of the total number permitted under the agreement reached by the Procurement and Assignment Service with the Surgeons General. Under this agreement the Procurement and Assignment Service can obtain deferments from active duty of one third of the commissioned officers who are completing nine month internships in order to insure filling of essential junior residencies. It also can obtain deferments for one half of the commissioned officers serving in junior residencies for service in nine month senior residencies.

Of the group of commissioned officers serving as interns and called to active duty after January 1 and before April 1, deferments have been obtained for the one third permitted by the Procurement and Assignment Service-Surgeons General agreement.

The total number of deferments from active duty of those called to active duty in April fell short of the one third permitted. Even if the Central Office Procurement and Assignment Service had received in time all the applications for deferment of interns and residents which were ultimately submitted, the total number of these requests would still not have equaled one third of the total number called to active duty. This means that hospitals are not finding the physicians who have graduated at odd dates and who therefore complete their internships at odd dates. This also means that medical manpower is not being utilized most effectively.

Still another difficulty develops from the fact that deferment application forms are being received by the central office so late that action cannot be taken under the agreement already mentioned. During the past thirty days 50 per cent of all applications for deferment of interns and residents were received too late for action.

Perhaps the most serious result is the complete loss to civilian hospitals of the services of those individuals who might have been deferred but who are now called to active duty. Each physician going on active duty in April, who might have been deferred, means a loss to civilian hospitals of thirteen and one-half months of service by that physician. This April group was of vital importance, since it is the only large group between January and July from which hospital service could be obtained to cover the shortage period from July to October of this year.

Equally serious is the failure to submit deferment application forms on time. The Procurement and Assignment Service has had excellent cooperation from the Surgeons General. The Surgeon General of the Army, as a matter of fact, requested the Adjutant General to revoke April active duty orders for one half of the men for whom deferment requests were submitted after the deadline. Each case in which the Surgeon General is asked to request revocation of active duty orders from the Adjutant General increases the work load of both offices and also seriously affects the agreement reached between the Procurement and Assignment Service and the Surgeons General.

The lists appearing in THE JOURNAL have been dwindling from week to week. This creates the impression that civilian hospitals do not need the services of one third of the commissioned officers being called to active duty at the termination of their internships.

Hospitals should take certain definite steps:

1. They should determine the exact dates on which commissioned officers who graduated on odd dates will complete their internships.

2. They should also determine for their own information the exact dates on which other commissioned interns will be called to active duty.

3. Even if they do not have a need for the services of these interns in junior residencies, they should assist other hospitals which are short of essential residents to obtain the services of these commissioned officers.

4. To assist other hospitals, this information should be sent to the state chairmen for Physicians, Procurement and Assignment Service, within the next thirty days so that the state chairmen will be able to refer the names of commissioned officers eligible for junior residencies to hospitals in need of their services.

5. Hospitals in need of residents can protect themselves by getting in touch with commissioned officers serving internships in sufficient time to obtain their deferments for junior residencies.

6. Hospitals requesting deferments from active duty must fill out and forward forms 218-Revised (Application for Deferment of Interns and Residents) in sufficient time to have them favorably considered by the Surgeons General—four months before completion of hospital service.

If the 9-9-9 Intern-Resident Deferment Program is to be continued there must be an immediate increase in the cooperation between hospitals in order to insure effective utilization of medical manpower. There must also be an increase in the cooperation between hospitals and the state chairmen of the Procurement and Assignment Service.

HOSPITALS NEEDING INTERNS AND RESIDENTS

The following hospitals have indicated to the Council on Medical Education and Hospitals that they have not completed their house staff quota allotted by the Procurement and Assignment Service:

(Continuation of list in THE JOURNAL, March 25, p. 928)

FLORIDA

St. Luke's Hospital, Jacksonville. Capacity, 224; admissions, 7,763. Mr. W. E. Arnold, Executive Director (1 intern—July 1).

ILLINOIS

Mercy Hospital, Chicago. Capacity, 360; admissions, 7,701. Sister M. Redempta, R.N., Superintendent (1 intern).

IOWA

Broadlawns, Polk County Hospital, Des Moines. Capacity, 174; admissions, 2,823. Mr. T. P. Sharpnack, Administrator (interns—April 1, October 1).

PENNSYLVANIA

Philadelphia Hospital for Contagious Diseases, Philadelphia. Capacity, 1,077; admissions, 3,444. A. C. LaBoccetta, Acting Superintendent and Medical Director (3 residents).

MISCELLANEOUS

WARTIME GRADUATE MEDICAL MEETINGS

Additional subjects and speakers for Wartime Graduate Medical Meetings have just been announced:

At Halloran General Hospital, Staten Island, N. Y.: Low Back Pain, Dr. Philip D. Wilson, April 11.

At Station Hospital, Fort Niagara, N. Y.: Knee Disabilities, Dr. Pio Blanco, April 5; Acute Anterior Poliomyelitis, Dr. Francis Gustina, April 12.

At Grand Central Palace, New York City: Peripheral Vascular Disease, Dr. A. Wilbur Duryee, April 7; General Surgical Approach to the Abdomen, Dr. John F. Erdmann, April 14 and 21; Disorders of the Low Back, Dr. Arthur Krida, April 28.

At Camp Shanks, Orangeburg, N. Y.: Surgical Bacteriology in the Treatment of Surgical Infections, Dr. Frank L. Meleney, April 6; Present Status of Use of Sulfonamides in Surgery and Medicine, Dr. Walsh McDermott, April 13; Anesthesia, Dr. Emery A. Rovenstine, April 20; Neuropsychiatric Problems in the Army, Col. William C. Porter, April 27.

At Camp Upton and Mason General Hospital, New York: Cardiac Irregularities, Dr. Harry Gold, April 3.

At Camp Kilmer, N. J.: Blood and Plasma Bank and the Use of Its By-Products, Lieut. Clifford K. Murray, April 10; Psychosomatic Aspects of Hypertension, Dr. Edward Weiss, April 24.

At England General Hospital, Atlantic City, N. J.: Dysentery, Dr. William Sawitz, April 4.

At Fort Monmouth, N. J.: General Public Health Aspects of Venereal Disease Control, Dr. Norman Ingraham, April 5; Yellow Fever, Dr. William Sawitz, April 12; Fundamentals of Anesthesia, Dr. Frederick P. Haugen, April 19; Peripheral Nerve Block, Lieut. Comdr. Don Hale, April 26.

At Indiantown Gap, Pa.: Basic Concepts in the Treatment of Burns, Dr. Jonathan Rhoads, April 5; Treatment of Burns and the Closure of Surface Defects by Skin Grafts and Flaps, Dr. Hans May, April 12; Viral Pneumonia, Dr. Truman Schnabel, April 19; Yellow Fever, Dr. William Sawitz, April 26.

At Naval Hospital, Philadelphia: Pericarditis, Dr. Thomas M. McMillan, April 14; Digitalis Therapy, Dr. William D. Stroud, April 14; Rickettsial Infections, Dr. William Sawitz, April 28.

At Camp Lee, Va.: Laboratory Aspects of Tropical Diseases, Dr. J. H. Scherer, April 6; Malaria (Clinical Manifestations and Therapy), Dr. Carlton J. Casey, April 14; Plastic and Maxillofacial Surgery, Dr. Guy Harrison, April 21; Respiratory Diseases and Their Treatment by Chemotherapeutic Agents, Capt. Paul S. Strong, April 28.

At Woodrow Wilson General Hospital, Staunton, Va.: Prevention and Treatment of Wound Infections, Dr. William H. Parker, April 6; Drainage of the Pleura with Particular Relation to Chest Injuries, Dr. I. A. Bigger, April 13.

At Camp Pickett, Virginia: Respiratory Diseases and Their Modern Treatment, Dr. Porter P. Vinson, April 6; Prevention and Treatment of Wound Infections, Lieut. Col. Harlan H. Taylor, April 12; Shock and Burns, Lieut. Comdr. Arthur J. Mourot, April 14; Traumatic Surgery of the Abdomen, Lieut. Col. W. R. Galbreath, April 19; War Wounds of the Genitourinary Tract, Major William Bisher, April 21.

At Fort Eustis, Va.: Amputations, Upper and Lower Extremities, Comdr. H. C. Felt, April 13; Psychosomatic Medicine, Dr. Louis A. Schwartz, April 27.

At Norfolk Naval Hospital, Portsmouth, Va.: Newer Drugs and Their Uses in Practice, Major Paul L. McLain, April 12; Peripheral Nerve Injuries, Dr. Claude C. Coleman, April 26.

At Langley Field, Virginia: Psychiatric Problems in Military Service, Dr. John A. Rose, April 4; Military Surgery, Col. Daniel L. Borden, April 11; Treatment of Trauma to the Chest (demonstrated with motion pictures) Major Leonard Bush, April 18; Aviation Medicine, General, Dr. Ludwig Lederer, April 25.

At Ashford General Hospital, White Sulphur Springs, W. Va.: Allergy with Special Reference to Asthma (clinical presentations and ward rounds), Dr. Oscar Swineford Jr., April 3; Arthritis (clinical presentations and ward rounds), Dr. Ralph Pemberton, April 10.

At Fort George G. Meade, Maryland: Lung Injuries, Comdr. L. E. Gilje, April 14; Aviation Medicine with Special Reference to the Cardiovascular System, Dr. Walter A. Bloedorn, April 21; The Use of Sulfamerazine in Dysentery, Dr. Lay Martin, April 28.

At Fort Belvoir, Virginia: Traumatic Surgery of the Abdomen, Capt. Joseph E. Hamilton, April 3; Peripheral Nerve Injuries (demonstrated with motion pictures), Major Barnes Woodhall, April 10; Diagnosis and Treatment of Shock, Lieut. Col. D. B. Kendrick Jr., April 17; New Chemotherapeutic Agents and Their Uses in Practice, Dr. Harry F. Dowling, April 24.

At Newton D. Baker General Hospital, Martinsburg, W. Va.: New Chemotherapeutic Agents and Their Uses in Practice, Dr. Russell A. Nelson, April 3; Dysenteries, Dr. Moses Paulson, April 10; Malaria, Dr. Walter A. Baetjer, April 17; Virus and Bacterial Pneumonias and Their Treatment, Dr. Warfield T. Longcope, April 24.

At U. S. Naval Hospital and U. S. Naval Academy Dispensary, Annapolis, Md.: Amputations, Upper and Low Extremities, Lieut. Col. Martillus H. Todd, April 21.

At United States Naval Hospital, Bainbridge, Md.: Clinic in Traumatic Surgery, Lieut. Col. Firmadge K. Nichols, April 6; Clinic in Orthopedic Surgery, Dr. H. L. Skinner, April 13.

HOSPITAL SHEETING FOR MATTRESS PROTECTION

The U. S. Department of Commerce, National Bureau of Standards, recently issued a pamphlet on Hospital Sheeting for Mattress Protection, Commercial Standard CS114-43, which was accepted by the trade as its standard of practice for new production beginning Dec. 1, 1943. A recommended commercial standard for this commodity was adopted at a joint meeting of a committee of manufacturers of hospital sheeting for mattress protection and a committee of the American Hospital Association, March 25, 1943. The purpose of this commercial standard is to serve as a guide to producers, distributors and users of sheeting impervious to moisture used for the protection of hospital mattresses. It also provides a basis for clear understanding among producers, distributors and purchasers, and for specifying and guaranteeing the quality of such sheeting.

MILK SUGAR PRODUCTION

Because milk sugar production this year will not be sufficient to meet the requirements of all users, the War Food Administration has issued FDO 95 to direct milk sugar to most essential purposes. Effective April 1, FDO 95 requires approval by the director of distribution for use of milk sugar for any purposes. Under the order, authorization to accept delivery and use of milk sugar must be requested on forms supplied by WFA's office of distribution. When approval is granted, the supplier will be notified of the quantity he can supply under the order. The total estimated requirements for milk sugar in 1944, including infant foods, pharmaceuticals and penicillin, are more than 15 million pounds, exceeding 1943 production by at least 8 million pounds.

ALLIED FORCES DENTAL SOCIETY

The formation of an Allied Forces Dental Society, composed of leading dental surgeons of the Allied Nations, was recently reported by the American Dental Association. The society was formed for the purpose of pooling ideas to better the health of the fighting forces and to further postwar dental science, and more than 650 dental surgeons of the Royal Navy, Royal Air Force and American, British and Canadian armies have been admitted to membership in the society. Major Richard H. Carnahan of Texas, Capt. Philip S. Brackett of Massachusetts, Lieut. Comdr. E. S. Boden of Ohio and the help of British dental officials organized the new society, which was formed in London. Internationally known dental surgeons give lectures at the society's monthly meetings on latest methods of treatment.

ORGANIZATION SECTION

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Fortieth Annual Meeting, Held in Chicago, Feb. 14 and 15, 1944

(Concluded from p. 935)

THE FEDERATION OF STATE MEDICAL BOARDS

FEBRUARY 14—EVENING

FEDERATION DINNER

Licensure Trends and Medicine

ALPHONSE M. SCHWITALLA, S.J., St. Louis: The two chief categories of functions which are recognized to be the functions of the state boards, namely (*a*) the evaluation of professional competence of the physician and (*b*) the police power to debar from practice a physician proved to be unworthy, have in the past been differentially affected by social change. Hence it may be expected that they will be differentially affected by future social change. Of the two, the first group of functions, evaluation, is probably the more important for safeguarding the profession's integrity; the second is probably more important for securing the social protection of the people of which the state board is the guarantor. In the days that lie ahead the state boards will face intensified and greatly extended problems. Despite the adjustments which have been made in most states accepting a chronologically accelerated curriculum and accepting the recent recommendations of the Procurement and Assignment Service at the time when the 9-9-9 plan was introduced, there can be little doubt that numerous questions will arise concerning both the institutions from which students are graduating from this accelerated program and the particular qualifications of the individual applicant for license. There are still sufficient differences in the legal requirements for the practice of medicine to give rise to threatened increasing difficulties in reciprocity. To this problem there might be added the related problem of the foreign medical graduate. Then there stares us in the face as a seemingly inescapable menace the great problem of osteopathy. Despite the vigilance of the state boards there can be little doubt that cultism has gained ground in the last few years, and even though the responsibility for that growth cannot be laid at the door of the state board, nevertheless it is a state board problem that is growing in magnitude and in intensity. Then there is the question of the administration of examination methods for the purpose of determining the professional qualifications of the professional licensee, a question which on the surface is merely a matter of administrative policy but which is extremely far reaching in its professional implications. The objectives of the examination, standards of medical practice, the determination of procedures, all these and related questions are involved in any change of policy with reference to the method of examination. The state boards have accomplished much. They are face to face with much more. As medicine moves onward and upward the state boards too will have to enlarge their horizons and aspire to still higher heights of responsibility.

FEBRUARY 15—MORNING

DR. ADAM P. LEIGHTON, Portland, Maine, Presiding

ACCELERATED MEDICAL TRAINING AND RELATED LICENSURE IMPLICATIONS

Premedical Training

DR. VICTOR JOHNSON, Chicago: Acceleration in medical schools involves no basic changes except the elimination of the long summer vacations. Curricular changes are minimal, and no significant increase in weekly work by the student is required. The premedical curriculum has been shortened by greatly increasing the daily and weekly assignments as well as by eliminating long vacations. The results of this experiment in concentrated premedical education will be watched with interest by all who are concerned about the long years of training required for the professions, especially medicine. A reduction in this time, somewhere between the beginning of grammar school and the internship, would be desirable if it could be effected without impairment of the quality of the product.

A second feature of the Army and Navy programs is a standardization of the premedical curriculum, with little time for elective work. While this might help to elevate standards in some of the weaker participating schools and may be convenient to administer, it is not desirable as an educational principle to be retained.

A third experiment—a major one—is the attempt to select students for the study of medicine at an earlier academic period than in peacetime. It will be important to know whether such early selection will be successful.

Certain features of the selection program are highly undesirable. Bilateral selection by the school and the student has not been incorporated into the plan. Committees of medical student deans select the students for the study of medicine, but these committees or the schools or the students may not determine which student shall attend which school. Although this is apparently an administrative necessity, it must be recognized as educationally unsound.

A fourth innovation in wartime premedical training is one which may prove to be even more far reaching in its consequences than the ones already mentioned. The Army and Navy programs entirely eliminate the economic requirement for the study of medicine. Under the Army and Navy programs, ability to pay for an education has nothing to do with the selection of those to be educated. A serious study should be made of this obvious but revolutionary principle, to determine whether an entirely new source of brain power is being tapped.

It should be possible to develop an educational program involving four years of general education in the humanities, social and natural sciences, commencing with the third year of high school and continuing until a student is about 18 or 19 years old. This could be followed by a program of five calendar years of the study of medicine in an integrated curriculum incorporating the preclinical laboratory sciences and the study of man in health and disease. Graduation with the M.D. degree would then occur at 23 or 24 years of age instead of at 26 or 27. Licensing bodies must continue to adjust themselves to changes or arbitrarily limit the extent to which medical education shall progress.

The Accelerated Program in Medicine

DR. E. M. MACEWEN, Iowa City: The accelerated program was accepted with many misgivings as a war emergency measure because there was no other method by which the production of doctors could be increased without seriously lowering medical educational standards. The chief criticisms that have been directed against the program are (1) that medical standards were being lowered, (2) that the war would be over before any appreciable number of doctors would be made available, (3) that the health of the medical students was endangered and (4) that the student would have no time for contemplation and digestion of new material.

It may be concluded that the accelerated program is meeting the condition for which it was adopted. It is definitely adding to the production of doctors. The financial worries of more than 80 per cent of the students have been solved. Their health should not be endangered more than under prewar conditions. The curriculum has not been shortened; in fact, it has been lengthened in many schools. Therefore in agreement with the statement of Johnson, the conclusion must be drawn that the

accelerated program "per se need not reduce the standards of medical education"; that if certain other conditions can be met, a modified accelerated program deserves serious consideration in the permanent postwar plans.

Up to the present all the students admitted to our schools have been selected by the faculties of the respective colleges. With the exception of the present freshman class, all the students have met the regular prewar admission standards of the particular school they entered. Many of the members of the freshman classes and at least 80 per cent of all new admissions for the duration will present only the reduced emergency premedical training. After Jan. 1, 1945 they will have had only the concentrated military premedical courses. Many of these courses will be taken in very large classes with minimal personal instruction and under very difficult study conditions. What effect this regimented program will have on the quality of our future classes only time will tell. The fact that most of these students will have no choice of schools and that the schools will have no direct voice in the selection of their students may materially change the type of the student body. Whether this change will be for better or for worse remains to be seen. The doctrine expressed at the beginning of this paper makes us skeptical. On the other hand some excellent young men who normally, because of financial difficulties, would not go beyond high school may now have the opportunity for a professional training.

Despite all these handicaps the faculties of our approved medical colleges will continue to demand quality work from all their students. That a uniform is not a protection against academic failure has been amply demonstrated during the past year.

Effect of the Accelerated Program on Hospital Internships

Dr. Jean A. Curran, Brooklyn: Reduction of all internships to nine months duration appears to have resulted at present in generally lowered educational standards and further accentuation of intern shortages. But perhaps it is a bit early to estimate the full impact of the accelerated curriculum and the abbreviated internship schedule on the final quality of medical product that will be delivered to the country during the war and the postwar years. From all sides there appears to be uniform agreement that the nine months internship, either rotating, mixed or straight, is inadequate as an educational experience. The arbitrary reduction of all internships to the length of an academic year has merely accentuated a long term development. Therefore the rationing instituted last autumn by the Procurement and Assignment Service must be viewed as merely a palliative and not a curative measure; and more fundamental remedies must be sought. After the conclusion of hostilities there will probably be considerable demand for residency opportunities by men returning from military service, for which preparations must be made. At the same time we may anticipate a steadily widening gap between the increasing number of internships annually made available and the number of graduates from our schools to fill them. Even if all hospitals are able to attain a satisfactory educational level and lengthen their internships to two years, I doubt very much if supply and demand can be balanced. The answer, so far as hospitals are concerned, would appear to be in the provision of a greatly increased number of mixed residencies on a salaried basis, similar in complexion to senior internships but of longer duration and shading off into part time and then voluntary arrangements. This would give valuable preparation for men intending to enter general practice and at the same time would provide the necessary house staff coverage.

But all this is in the future. As we try to face the present situation as realistically as possible, every effort must be made to use the personnel now available as effectively and efficiently as possible. As never before, it is essential that each new group of interns be given thorough orientation in their duties when they begin service. Through the use of "streamlined" procedure books, better teamwork among administrators, medical staffs, nurses, social workers and technicians, provision of more stenographic or clerical assistance and the elimination of every unnecessary frill of "extra paper work" or extraneous duties, perhaps we may expect results as remarkable as those of the Kaiser shipyards. From painful necessity and through definition of new objectives in this changing social order, we may reach an attainment very sorely needed, namely a new vision and a spirit to insure its accomplishment.

While all of our resources at the present time are being devoted to an all out military effort, it would seem absolutely necessary that we plan as well for the postwar educational needs of our hospitals if we are going to avoid a prolonged medical depression.

Medical Licensure Aspects of Accelerated Medical Training

Dr. J. Earl McIntyre, Lansing, Mich.: Much confusion now exists in the process of legalizing the practice of medicine by the new crop of graduates of the medical schools under the accelerated programs of education, including internship and those coming in by reciprocal indorsement. In states having basic science laws or inelastic statutory licensure requirements, serious situations have arisen. The Surgeons General and the Procurement and Assignment Service have formulated the 9-9-9 plan, and its adoption by some hospital associations has been announced in many states where either statutory requirements or provisions in basic science acts make it impossible for examining boards to correlate any convenient plan for the prompt examination and licensure of graduates, interns and those seeking license by interstate reciprocal indorsement.

Many states having statutory minimum educational requirements have remedied the situation by adopting amendments giving the state examining and licensing boards authority to modify such requirements and thus go along with the plan for acceleration of medical curriculum and for shorter internship training. Examination schedules and administrative processes were promptly adjusted in line with the new semester periods of the medical schools. We are confronted, however, in many states, as in Michigan, with the provisions of the basic science law which prohibit admission to examination or licensure by indorsement and which prohibit the practice of medicine by any one who does not hold a certificate from the State Basic Science Board, unless exempt by college matriculation prior to a certain date fixed by the statute.

The examining boards are asked to admit men to examination or licensure by interstate reciprocal indorsement without having first obtained the required basic science certificate. The examining boards are also asked to permit men to serve as residents or to practice medicine in hospitals under various classifications until the next medical or basic science examination without having first obtained medical licensure and, in many cases, the required basic science certificate. This the boards cannot do. They cannot by act or acquiescence issue any dispensation to any person to practice medicine in any capacity until such person obtains a license to practice medicine. Where the statute provides that they must first obtain a basic science certificate before being admitted to examination or before being licensed by interstate reciprocal endorsement, the board is powerless and can neither legally admit them to examination nor issue them a license by reciprocity, neither permit nor acquiesce in their serving as resident physicians or otherwise practicing medicine in any hospital or elsewhere in the state until the required certificate is first obtained.

Hospitals in many cases admit men to residencies without inquiring as to whether they are legally qualified under both medical acts or basic science laws to practice, believing that legal requirements as to examinations, licenses or certificates will soon be fulfilled. They then clamor for dispensation, and the doctors involved present most stirring accounts of the predicament in which they now find themselves.

The shortening of internship periods in states having statutory internship period requirements must be by a change in such statute, or an amendment. Where there are no such statutory requirements as to internship, the boards in the several states have yielded to the request of the military and shortened the internship period requirement by virtue of their rule making power.

There is another legal aspect of this whole problem on which I might briefly touch. It is a question of deferments. There is considerable ill feeling which has been aroused in individuals criticizing the military in taking able and legally qualified men into the service and deferring the unfit for further training. We in Michigan have found many cases in which men were deferred who were graduates of a C school and not eligible for licensure and of men who were deferred for further so-called internship training in hospitals which are not approved for internship training and who therefore never could be licensed to practice medicine in Michigan. The Office of Procurement and Assignment or any other federal agency or official has no authority to confer on any one the right to serve as a resident physician or to authorize the practice of medicine under any hospital classification who does not hold a medical license or a basic science certificate where required for the practice of medicine. The military may place these men in military service and the Office of Procurement and Assignment may so assign them, but they cannot assign them to civilian practice or to civilian hospitals.

I urged two years ago that some action be taken by the several states to establish uniformity of standards and requirements so that more uniform reciprocity may obtain between the several states. There is now little uniformity in basic science law requirements. Many men otherwise eligible not holding basic science certificates from another state are prevented from accepting hospital appointments or entering civilian practice for the reason that the basic science boards of the two states have technical bars to reciprocity.

FEBRUARY 15—AFTERNOON

The New Nebraska Medical Practice Act

DR. GEORGE W. COVEY, Lincoln, Neb.: The examinations for licensure in Nebraska are conducted, under the new law, by a board of five members instead of the old three member board. Section 7 of L. B. No. 139, amending section 71-305 of the compiled statutes of 1929, also provides that two of its members shall be officials or members of the instructional staff of a class A medical school. Furthermore, the terms of the members are staggered and any one member may remain on the board through only two consecutive terms. Section 20 relates to the requirements for admission to examination to practice medicine and surgery. Part of these requirements need some explanation or comment. Number 2 is as follows: "Present to the Department of Health a certificate of ability in anatomy, physiology, chemistry, bacteriology, pathology and hygiene issued by the Board of Basic Sciences." The Board of Basic Sciences has waived the examination in these subjects in certain instances, but only after examination of the papers of the applicants who have passed similar examinations in other states. Our Basic Science Board thus reserves the right to determine for itself that the applicant has had a comparable examination and that, in the opinion of the Nebraska board, he has made a passing grade. The final item in section 21 reads as follows: "An osteopathic school or college, fulfilling all the foregoing requirements, shall not be refused standing as an accredited medical school because it may also specialize in giving instruction according to any special system of healing." This section also includes the provision" . . . that such minimum standards shall apply equally to all accredited schools." It places the entire responsibility for recommending schools for accreditation on the Board of Examiners in Medicine and Surgery.

Any school of osteopathy which can become accredited under the provisions of L. B. No. 139 is actually a so-called class A medical school and "osteopathic" in name only. Such a provision in the Nebraska law actually places the osteopathic school in its proper category. It is either teaching medicine and surgery according to accepted standards or it is teaching osteopathy. If it falls in the former category it will eventually cease to call itself osteopathic and its graduates will be doctors of medicine; if in the latter, they will remain osteopaths according to the accepted definition and will not seek to extend their practice beyond their lawful field. If similar laws were in operation throughout the nation, one can easily visualize the ease with which many problems arising in relation to these two professions could be solved.

Many osteopaths had been practicing medicine and surgery in Nebraska prior to the Supreme Court decision which defined their scope of practice under the old law. This decision was so clear that all of those who had been practicing illegally were compelled to return to osteopathy. The effect was, however, to cause a redoubled effort on the part of the osteopaths to get legislation passed which would give them all the rights of physicians.

One examination has been given since the new bill became law. Twenty-one osteopaths took the examination under the provisions of this section. Of this number six passed and fifteen failed. There were seventy-nine doctors of medicine who took this same examination. Of these, all passed. It appears that a very small percentage of the osteopaths who fall under this provision will be licensed; that, if our present basic science law remains unchanged, a few new ones will become licensed to practice osteopathy and, if their schools become good enough to permit their being accredited, they will be doctors of medicine rather than osteopaths and thus the controversies may be ended.

The combination of a good basic science law with this medical practice act will in all probability lead to several results. In the first place, the over-all quality of medical practice should be improved. Whereas a few osteopaths may achieve the right to practice medicine and surgery, the rank and file of these cultists who are not qualified will be effectively prevented from so doing. Those who gain this right will be at least as well qualified as many of the practitioners who have the degree of doctor of medicine. There will be no opportunity for those who are not so licensed to practice lawfully any healing art excepting that defined by the Supreme Court decision of 1941. If similar laws are adopted elsewhere, the tendency will be for osteopathic schools to become class A medical schools and for osteopathy excepting for its intrinsic value as a form of physical therapy to die. We believe we shall be relieved of the necessity for constantly opposing legislation designed to undo our laws relating to medical practice. In other words, we hope that the menace of poorly qualified osteopaths and chiropractors attempting to come into the practice of medicine through the side entrance will have been effectually neutralized in Nebraska.

In conclusion, I should like to leave with you a thought which has presented itself to me and to others. Could the quality of medical practice be further elevated by an addition to our practice acts requiring that every licensee shall take an examination in medicine and surgery periodically to show that he continues to be qualified to practice his profession? This would eliminate the few who, after graduation, are no longer interested in further education and relieve us of the necessity for constantly apologizing for some members of our own profession.

Medical Legislation

J. W. HOLLOWAY JR., Chicago: Some time ago the requirements for acceptance in the Medical Corps of the Army were modified to admit, under specified conditions, graduates of nonaccredited medical schools. Shortly thereafter there came to me an inquiry asking if service in the Medical Corps of the Army by such a graduate would qualify him for licensure in a state in which normally he could not qualify but in which the medical practice act contained an exemption in favor of former members of the Medical Corps of the Army. My answer was in the negative. While a number of states do relieve from the examination requirement applicants who have served in the Medical Corps of the Army, the matter of granting licenses to such applicants is usually left with the discretion of the licensing agency and is generally coupled with the requirement that the applicant must have graduated from an accredited medical school. Service in the Medical Corps of the Army, therefore, is not the open sesame to medical licensure as my correspondent implied. I myself do not feel that service in the Army or Navy Medical Corps should ipso facto qualify a physician for state licensure. The school of graduation is important, of course. So also is the quality of service rendered by the physician while in the Army or Navy, for some have been given honorable discharges for professional incompetence, for inadaptability and for other reasons that may or may not have a bearing

on qualification for licensure. Yet it does seem that the physician returning to civilian life deserves special consideration in the matter of licensure. He should not be penalized for answering the call of his country in her need.

Federal Funds for Relocation of Physicians

Early last October the President by special message asked the Congress to appropriate $1,000,000 to be used by the Public Health Service to supply medical and dental care in critical areas. It was contemplated that the Public Health Service would use this appropriation to supply the needed care in one of two ways: (1) assign its own personnel to such areas to treat the civilian sick or (2) induce private practitioners of medicine and dentistry to move into the areas by paying them $250 a month for a period of three months plus moving expenses. In event that the Public Health Service sent its own personnel into the areas to treat the civilian sick, it was proposed that these medical officers should charge for their services according to a fee schedule jointly formulated by the state department of health and the United States Public Health Service. The fees collected were to be turned over to the state department of health to pay expenses incurred in rendering the care, such as office expense. If at the end of the year there remained any surplus, that surplus was to be covered in the Treasury of the United States. As enacted, the law provides $200,000 instead of the $1,000,000 initially requested, does not authorize the Public Health Service to assign its own personnel to critical areas, requires the requesting community to contribute 25 per cent of the cost and specifically provides that the relocated physician or dentist must obtain a license to practice in the state to which he moves.

While under this federal program the application for the services of a physician must be approved by the state health department, while the availability of physicians for relocation must be determined by the State Procurement and Assignment Service chairman, and while the financial arrangements will be made with the physician by the United States Public Health Service, the state licensing board will be the agency to determine the qualifications of the physician to practice in the state to which he is relocated. That determination must be made, of course, in compliance with state licensure laws.

U. S. PUBLIC HEALTH SERVICE TO STUDY BLUE CROSS PLANS

At the midwinter conference of plans for providing medical service, held in Chicago in February, it was voted to approve a study to be made by the U. S. Public Health Service of various Blue Cross hospital service plans. Following is a statement of the purposes, procedure and scope of the proposed study:

I. PURPOSE OF STUDY

The need for adequate health service to the people of America makes it desirable that the U. S. Public Health Service have an informed opinion of the present and potential usefulness of existing methods of distributing medical and hospital care.

The U. S. Public Health Service is interested in making a study to determine how well the Blue Cross Plans are now serving and may best serve public needs. Blue Cross Plans also are interested in learning how they may be made more effective. This study has been proposed in the public interest and its purpose is to appraise the advantages and limitations of Blue Cross Plans, which have enrolled thirteen million subscribers throughout the United States.

The board of trustees of the American Hospital Association and the Hospital Service Plan Commission have endorsed this study and have recommended that all Blue Cross Plans cooperate with the U. S. Public Health Service.

II. PROCEDURES OF STUDY

The study will include conferences with the directors and staffs of representative plans and, in cooperation with the plan directors, conferences with representatives of the hospitals, the medical profession and the general public in the community.

III. SCOPE OF STUDY

The study will include all aspects necessary for an understanding of the plans as individual entities and of the Blue Cross movement as a whole. This will cover the history, growth, subscription rates and benefits, contracts with hospitals, legal status, enrolment policies and problems, financial status, utilization experience and relations with hospitals, the medical profession and the general public. It will also include data as regards interplan relationships and the American Hospital Association approval program.

DOCTORS AT WAR

Radio broadcasts of Doctors at War by the American Medical Association in cooperation with the National Broadcasting Company and the Medical Department of the United States Army and the United States Navy are on the air each Saturday at 4:30 p. m. Eastern war time (3:30 Central war time, 2:30 Mountain war time and 1:30 Pacific war time).

The titles and guest speakers for the next three programs are as follows:

April 1. "White Reaper."

Speaker, Kendall Emerson, M.D., Managing Director, National Tuberculosis Association, New York.

April 8. "Men with New Faces."

Speaker, Major General D. N. W. Grant, M. C., A. U. S., Air Surgeon, A. A. F., Washington, D. C.

April 15. "Decks Aflame."

Speaker, Capt. French Moarr (MC), U.S.N., Washington, D. C.

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Changes in Status.—S. 662 has been passed by the House to authorize pensions for certain physically or mentally helpless children. The purpose of this bill is to remove an inequality in existing law for the benefit of a small number of helpless children of the veterans of the Civil War, the Indian wars, the Spanish-American War, including the Philippine Insurrection and the Boxer Rebellion, and the Regular Establishment whose service was prior to April 21, 1898. S. 1767 has passed the Senate, contemplating the enactment of the "Servicemen's Aid Act of 1944." A subcommittee of the House Committee on Interstate and Foreign Commerce has concluded hearings on H. R. 3379, a bill to codify the laws relating to the Public Health Service. H. R. 4371 has been reported to the House, proposing an annual appropriation of $5,000,000 to enable the Department of Labor to cooperate with state agencies administering labor laws in establishing and maintaining safe and proper working conditions in industry and in the preparation, promulgation and enforcement of regulations to control industrial health hazards.

Bills Introduced.—S. 1808, introduced by Senator Johnson, Colorado, provides for temporary appointment as officers in the Army of the United States of members of the Army Nurse Corps, female persons having the necessary qualifications for appointment in such corps, female dietetic and physical therapy personnel of the Medical Department of the Army, exclusive of students and apprentices, and female persons having the necessary qualifications for appointment in such department as female dietetic or physical therapy personnel. S. 1809, introduced by Senator Johnson of Colorado for Senator Reynolds, North Carolina, proposes to remove the limitation on the right to command of officers of the Dental Corps of the Army, the

existing limitation restricting such officers to command in the Dental Corps. S. 1813, introduced by Senator Wagner of New York for himself and for Senator George of Georgia and Senator Clark of Missouri, proposes to amend title II of the Social Security Act so as to give insurance credits under the federal old age and survivors' insurance provisions of that act for military service. S. 1778, introduced by Senator Langer, North Dakota, is similar in objective to the preceding bill. H. R. 4447, introduced by Representative Allen, Louisiana, proposes the appropriation of an amount not in excess of $5,000,000 to construct in or near Gum Springs, La., a 1,000 bed patient veterans' hospital for the diagnosis, care and treatment of neuropsychiatric disabilities. H. R. 4448, introduced by Representative Domengeaux, Louisiana, proposes to provide for free government inspection of sea food. H. R. 4418, introduced by Representative Walter, Pennsylvania, provides that persons who are otherwise qualified, but who have physical defects which will not interfere with the performance of general or special duties to which they may be assigned, may be issued appointments in the Naval and Marine Corps Reserve and ordered to active duty.

STATE MEDICAL LEGISLATION

Kentucky

Bill Enacted.—H. 259 was approved by the governor, March 18, so amending the narcotic drug act as to define narcotic drugs to include isonipecaine.

Mississippi

Bills Introduced.—Senate Concurrent Resolution 32 and House Concurrent Resolution 41 propose to provide for the appointment of a special committee to consider the desirability of enacting a workmen's compensation act in the state and to report its conclusions to the 1946 session of the legislature. S. 384 proposes to authorize the board of supervisors of Harrison County to provide medical and hospital treatment and care for any resident of the county who, because of indigency, cannot obtain the care required.

North Dakota

Bill Introduced.—S. 5-X proposes to authorize the state health department in cooperation with the University of North Dakota to obtain blood from donors in the state, to purchase equipment necessary for processing that blood, to process the blood, and to furnish blood plasma so processed free of charge to the people of the state.

Rhode Island

Bill Introduced.—H. 834 proposes to permit practicing assistant pharmacists who have passed examinations identical with the examinations given for registered pharmacists and who have been employed as duly qualified registered assistant pharmacists for ten or more years to conduct or manage pharmacies.

Virginia

Bills Enacted.—The following bills have been approved by the governor: H. 29, repealing the existing medical practice act and enacting an entire new act, which, among other things, gives representation on the board of medical examiners to the homeopaths, osteopaths, chiropractors and naturopaths. All applicants for licenses to practice any form of the healing art must pass examinations to be given by the board in anatomy, histology, pathology, physiology, bacteriology or microbiology, biochemistry, diagnosis, sanitation and hygiene; S. 165, to require every state agency authorized to conduct examinations of applicants for licenses to practice any profession to file a copy of each examination within a period of ten days after it is given with the secretary of the commonwealth, who must preserve it for at least two years as a public record accessible to any person; S. 170, to amend the narcotic drug act so as to define a narcotic drug as to include isonipecaine; S. 219, so to amend the laws relating to venereal diseases as to require public health officers to investigate all cases of lymphogranuloma inguinale or granuloma inguinale as well as syphilis, gonorrhea and chancroid, to authorize health officers to require persons suspected of being infected with any of those diseases to submit to examination and to make it a misdemeanor for any person found infected with any of those diseases to fail to take the treatment prescribed by a competent physician or to fail to continue treatment until cured; and S. 234, to prohibit the retail sale or distribution, except on the prescription of a doctor of medicine, dentist or veterinarian, of hormones or hormone drug preparations.

WOMAN'S AUXILIARY

Minnesota

The Goodhue County auxiliary and Nicollet-LeSueur counties made cancer dressings for Our Lady of Good Counsel Free Cancer Home in St. Paul.

The Hennepin County auxiliary recently gave its annual Silver Tea for Sarahurst rehabilitation home for patients from Glen Lake Sanatorium.

Mrs. F. S. McKinney, state president of Minnesota, was guest speaker at the November meeting of Washington County auxiliary.

Mississippi

The Gulfport unit of the Woman's Auxiliary of the Harrison-Stone-Hancock Counties Medical Society celebrated its twentieth anniversary recently at the home of the organizer, Mrs. D. K. Williams, with Dr. Emma Gay, a charter member, as co-hostess.

The Woman's Auxiliary of Clarksdale and Six Counties Medical Society had its semiannual meeting in November. Dr. E. LeRoy Wilkins, president of the state medical society, gave a talk on juvenile delinquency.

North Carolina

Mrs. Reuben McBrayer, president of the Hoke County auxiliary, has given an emergency medical kit in memory of her husband's father, Dr. L. B. McBrayer.

Pitt and Wayne County auxiliaries held meetings recently, and Wake County auxiliary held open house December 10 at the home of Dr. and Mrs. M. D. Hill for Wake County doctors and their wives.

Pennsylvania

Pennsylvania reported at the national board meeting that it had the largest number of *Hygeia* and *Bulletin* subscriptions. It is also working actively against the Wagner-Murray-Dingell bill.

Beaver County voted to give $50 to the Passavant Home, $50 to the Beaver County Tuberculosis Sanitarium, $10 for a tuberculosis bond and $5 to the Salvation Army.

Berks County auxiliary made surgical dressings in November and gave seventy-five garments to the Needlework Guild.

Cambria County auxiliary had a dinner in Johnstown recently.

Erie County auxiliary heard Dr. Martin M. Maliner of Brooklyn discuss "Congenital Heart Disease and Rheumatic Fever" at the Nurses Home at Hamot Hospital in Erie.

Lehigh County auxiliary held its annual reciprocity tea recently in Allentown. Congressman Charles Gerlach explained the Wagner-Murray-Dingell bill and pledged himself "to do all in his power to defeat the insidious and un-American provisions of the bill."

Philadelphia County, Montgomery County, Schuylkill County and Franklin County held interesting meetings recently. At a fashion show held by the Philadelphia County auxiliary $600 was netted.

Westmoreland County auxiliary voted to contribute $150 to the medical benevolence fund.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

University News.—Dr. F. P. Ludueña, adjunct professor of pharmacology of the medical faculty of the University of Rosario, Argentina, has become assistant professor in the department of pharmacology of the Stanford University School of Medicine, San Francisco.

Pharmacists Arrested in Drug Sale.—More than 40 men, most of them pharmacists, have been arrested in connection with the sale of a drug to enable army draftees to evade induction, newspapers reported March 16. According to the report, state and army officials conferred on plans to halt the sale of the drug, which army men said causes apparent mental and physical unfitness for military service on the part of men taking it. Pharmacists arrested for its sale are being charged with dispensing it without a prescription, it is reported.

Dr. Lyttle Named Professor of Pediatrics.—Dr. John D. Lyttle, since 1921 a member of the faculty of Columbia University College of Physicians and Surgeons, New York, has been appointed professor of pediatrics at the University of Southern California School of Medicine, Los Angeles, and director of pediatrics of the Children's Hospital, effective April 1. Dr. Lyttle graduated at Cornell University Medical College, New York, in 1916. He joined Columbia in 1921 as an instructor, subsequently serving as associate and assistant clinical professor of pediatrics.

Physicians Needed.—The Los Angeles County Civil Service Commission announces that applications for resident physicians (radiology) are now being accepted. Applications are to fill positions in the Los Angeles County Hospital. Eligible physicians are those who are 21 to 55 years of age, graduates of an approved medical school, who have completed at least nine months' internship in an approved hospital. Applications will also be accepted from interns prior to the completion of their internship. There will be no written examination. Applications must be filed on or before April 15. Additional information may be obtained from the Los Angeles County Civil Service Commission, Room 102, Hall of Records, Los Angeles 12.

INDIANA

Society News.—The La Porte County Medical Society was addressed at La Porte, February 17, by Rolla N. Harger, Ph.D., Indianapolis, on "Domestic and Industrial Poisonings." ——At a meeting of the St. Joseph County Medical Society in South Bend recently Dr. Louis N. Katz, Chicago, spoke on the "Principles in the Diagnosis and Treatment of Peripheral Vascular Diseases."

Industrial Health Conference.—The Indiana State Medical Association will conduct its second industrial health conference at the Indiana University School of Medicine, Indianapolis, April 19-20. Among the speakers on the program will be:

Dr. Jacob T. Oliphant, Farmersburg, Obligations of the State Medical Association in the Training of Industrial Physicians.
Dr. Willis D. Gatch, Indianapolis, Obligations of the University in the Training of Industrial Physicians.
Dr. Roscoe L. Sensenich, South Bend, Postwar Industrial Health Problems.
Dr. Stewart L. Rankin, Charlestown, Medical Records and Record Keeping in Industry.
Samuel M. Peck, senior surgeon, U. S. Public Health Service Reserve, Occupational Acne.
Dr. Sumner L. S. Koch, Chicago, Treatment of Hand Injuries.
Dr. John H. Foulger, Wilmington, Del., Preventive Medicine in Industry.
Dr. Victor G. Heiser, New York, Value of Industrial Medical Services in Industry.
Dr. Dudley A. Irwin, Pittsburgh, Prevention and Treatment of Silicosis with Aluminum.
Dr. Kenneth E. Markuson, Lansing, Mich., A New Technic in Drawing Blood for Serodiagnostic Tests: Use of the Hemospast.
Dr. Oscar A. Sander, Milwaukee, Lung Changes in Electric Arc Welders.
Dr. Verne K. Harvey, Washington, D. C., Present Day Employment of Physically Handicapped Under Federal Civil Service.
Dr. Harold A. Vonachen, Peoria, Ill., Community Organization for Rehabilitation and Reemployment.

The program will include a symposium on "Rehabilitation and Employment of the Handicapped Veteran," with Col. Anthony J. Lanza, M. C., A. U. S., as the moderator.

KENTUCKY

Medical Students Examine Domestic Employees.—Students of the University of Louisville School of Medicine are examining domestic employees in a program for the examination of workers conducted by the medical school and partly financed by the Louisville Tuberculosis Association. According to the *Bulletin* of the National Tuberculosis Association, blood pressure and blood samples for the Kahn test are taken and the Snellen vision test made. An examination of the eye, ear, nose and throat and dental examination, urinalysis, cervical smears and blood analyses are included in the work done by the students. Chest fluoroscopy is made under the supervision of a physician in charge of the clinic, and the results are recorded on the patient's history blank. On completion of the work, physicians in charge of the clinic go over the results.

MASSACHUSETTS

New Dean of Boston University.—Dr. Charles F. Branch, professor of pathology, Boston University School of Medicine, has been appointed dean of the school to succeed Dr. Bennett F. Avery, who resigned to become director general of public health of Iran. Dr. Branch, a graduate of the University of Vermont College of Medicine, Burlington, in 1923, has been a member of the teaching staff of the school for eighteen years, serving as professor of pathology since 1932.

Final Commencement of Harvard Dental School.—On March 23, fifteen army students, sixteen navy and seven civilian students graduated at Harvard Dental School, the last graduates of the oldest university dental school in the United States. On March 31, responsibility for dental education and research at Harvard was assumed by the Harvard School of Dental Medicine, which at the end of four years will confer the degree of D.M.D. on its graduates (THE JOURNAL, May 15, 1943, p. 187).

Warren Triennial Prize Awarded.—The Warren Triennial Prize, awarded through the Massachusetts General Hospital, Boston, has been presented for 1943 to Dr. David G. Cogan, V. Everett Kinsey, Ph.D., and Erwin O. Hirsch, B.A., for their essay entitled "Physiological Studies on the Cornea." An essay entitled "Studies on Traumatic Shock" by Dr. Everett I. Evans, Richmond, Va., was awarded honorable mention in the competition. The prize was founded by the late Dr. J. Mason Warren in memory of his father, Dr. John C. Warren, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation considered worthy of a premium on some subject in physiology, surgery or pathologic anatomy, the arbiters being the executive committee of the Massachusetts General Hospital. The amount of the prize for 1943 was $500.

MICHIGAN

Changes in Health Officers.—Dr. John K. Altland, Hastings, was to resume his position as director of the Barry County Health Department on March 16, newspapers reported. Dr. Altland has been serving with the coast guard but has now been placed on the inactive list.

Physician Sentenced as Spy.—Dr. Fred W. Thomas, Detroit, on March 16 was sentenced to sixteen years in federal prison following his conviction of conspiracy to violate the wartime espionage act. The sentence was passed by federal Judge Edward J. Moinet, after the conviction of Dr. Thomas two weeks previously by a federal court jury. Newspapers stated that the physician was accused of supplying espionage information on war production and troop movements and ingredients for the manufacture of invisible ink to Miss Grace Buchanan-Dineen, described by the federal bureau of investigation as leader of the espionage ring.

Plasma Program to Be Expanded.—During a recent special session of the legislature, $250,000 was appropriated to augment the plasma program conducted by the state department of health. The project includes the enlarging of facilities in the state laboratories. New construction is to provide an additional 3,900 square feet of floor space which, according to the state department of health, will permit the production of four times the amount of plasma produced heretofore. The plasma program was launched in the state last September and has now been extended to thirty-three Michigan communities, the service including the establishment of plasma reserves in local hospitals. Physicians are supplied with the plasma, free of charge, for the treatment of civilian patients. One traveling clinic, a physician and four nurses, is also a part of the program, and present plans call for the commissioning of two more units.

MINNESOTA

Dr. Herrell Honored by Chamber of Commerce.—Dr. Wallace E. Herrell, assistant professor of medicine, University of Minnesota Graduate School, Rochester, was recently presented with the distinguished service key of the Rochester Junior Chamber of Commerce for "outstanding service in 1943." The report indicated that the award went to Dr. Herrell for his work on penicillin.

MISSOURI

Raymond McIntyre Enters Military Service.—Mr. Raymond McIntyre, St. Louis, executive secretary of the Missouri State Medical Association, has been granted a leave of absence from the association to accept a commission in the U. S. Navy as lieutenant (jg).

Physician Provides Bequest for Hospital.—Dr. Caleb A. Ritter, who at the time of his death January 31 was reported to be resident in the Trinity Lutheran Hospital, Kansas City, left a trust fund to the hospital to be used for the maternity department and to be known as the Dr. C. A. Ritter bequest.

Symposium on Degenerative Diseases.—The research unit of the St. Louis City Infirmary and the Washington University School of Medicine, St. Louis, cooperated in a symposium at the infirmary, March 24, on degenerative diseases. Among the speakers participating were:

Dr. Irvine H. Page, Indianapolis, Arteriosclerosis and Lipid Metabolism.
Dr. Lester R. Dragstedt, Chicago, The Role of the Pancreas in Arteriosclerosis.
Dr. Edward J. Stieglitz, Washington, D. C., Difficulties in Clinical Recognition of Degenerative Diseases.
Dr. William J. Kerr, San Francisco, Correlation of Clinical Knowledge in the Treatment of Degenerative Diseases.

At a dinner session, the speakers included George Reeves Throop, LL.D., chancellor, Washington University, Dr. Frank Fremont-Smith, medical director, Josiah Macy Jr. Foundation, New York, and Dr. William deB. MacNider, Kenan research professor of pharmacology, University of North Carolina School of Medicine, Chapel Hill, who spoke on "Age: Change and Adjustment."

NEW JERSEY

Hospital Receives Physician's Library.—The Nathan and Miriam Barnert Memorial Hospital, Paterson, has been presented with the library, medical and surgical supplies and office equipment of the late Dr. David H. Mendelsohn, who at the time of his death was attending surgeon at the hospital. According to the *Bulletin* of the Passaic County Medical Society, the library consisted of more than 200 textbooks and 5 bookcases. The equipment consisted of an operating table, autoclave, instruments, microscope and other articles. An oil painting of Dr. Mendelsohn, the work of Henry J. Wolff, was recently dedicated and hung in the solarium of the hospital.

State Medical Meeting.—The Medical Society of New Jersey will hold its annual meeting at the Hotel Claridge, Atlantic City, April 25-27, under the presidency of Dr. Ralph K. Hollinshed, Westville. One general session will be addressed Tuesday afternoon by Drs. Louis H. Bauer, Hempstead, N. Y., Walter H. Judd, Washington, D. C., and Robin C. Buerki, Philadelphia, on "Postwar Planning," "A Country Doctor in Washington" and "Postwar Medical Education" respectively. Another will be addressed Thursday morning by Mr. E. A. van Steenwyk, Philadelphia, on "Can Voluntary Health Insurance Meet the Need," and Capt. Don S. Knowlton (MC), U. S. Naval Reserve, "The Marines Have Landed." At the banquet Wednesday evening, Dr. Samuel Emlen Stokes, Moorestown, will be toastmaster and Dr. James E. Paullin, Atlanta, President of the American Medical Association, will discuss "Place of the Physician in the Postwar World." Among other speakers on the program will be:

Lieut. Col. Henry A. Christian, and Major Charles S. Morrow, M. R. C., Diagnosis of Cardiac Abnormalities Through the Use of Positional Electrograms.
Dr. Truman G. Schnabel, Philadelphia, Bronchiogenic Carcinoma.
Dr. George Morris Piersol, Philadelphia, The Diagnosis of the Continued Fevers Commonly Encountered in General Practice.
Dr. Martin E. Rehfuss, Philadelphia, Medical Treatment of Biliary Tract Disease.
Dr. William O. Wuester Jr., Elizabeth, Cancer of the Lip and Skin.
Dr. Benjamin W. Carey, Pearl River, N. Y., Newer Aspects of Chemotherapy.
Dr. Murray H. Bass, New York, Lipoid Diseases.
Dr. William H. Hahn, Newark, Role of Vitamins in Physiology of Vision.
Dr. Richard D. Swain Jr., Newark, Oral and Ocular Manifestations of Head Trauma.
Dr. Henry B. Orton, Newark, Infection of the Neck.
Dr. Wilbur Emory Burnett, Philadelphia, Postoperative Care of the Gallbladder Patient.
Major Champ Lyons, M. C., A. U. S., Treatment of Burns, Shock and Hypoproteinemia.
Dr. Alfred Meurlin, East Orange, Analysis of One Hundred Puerperal Deaths in Essex County.
Dr. Hammell P. Shipps, Camden, The Abortion Problem.
Dr. Julius Levy, Newark, The Federal Aid Program.
Dr. Lyman Burnham, Englewood, The Rh Factor.
Dr. Alan F. Guttmacher, Baltimore, Social Problems of Obstetrics and Gynecology.
Dr. Sigurd W. Johnsen, Passaic, Common Disorders of the Digestive Tract.
Dr. George T. Pack, New York, Metabolic Disturbances Associated with Cancers of the Gastrointestinal Tract.
Capt. J. Edward Berk, M. R. C., Gastrointestinal Problems in the Army.
Dr. Julius Gerendasy, Elizabeth, Diagnostic Pitfalls in Proctology.

NEW YORK

Personal.—Dr. Albert J. Colton, Buffalo, who invented the card index system bearing his name, will observe his eightieth birthday, April 17.——The New Rochelle Medical Society gave a dinner on February 15 in honor of Dr. Frank B. Littlewood, who recently completed fifty years in the practice of medicine.

Graduate Lectures.—A series of lectures on general medicine opened March 30 for the medical staff of Memorial Hospital of Greene County, Catskill. Dr. Laird S. Van Dyck, New York, delivered the first lecture, on "Diagnosis and Treatment of Common Skin Diseases." Others in the series will be:

Dr. David K. Miller, Buffalo, What Do We Know About Vitamins? April 27.
Dr. Wallace B. Hamby, Buffalo, The Diagnosis and Treatment of Head Injuries, May 25.
Dr. A. Wilbur Duryee, New York, Circulatory Disturbances in the Extremities, June 29.

Dr. Byron P. Stookey, New York, addressed the Broome and Tioga County Medical societies in Binghamton, March 14, on "Low Back Pain."

New York City

Pharmacy and Public Health.—On April 10 the New York Branch of the American Pharmaceutical Association will meet in Keating Hall on the Fordham University Campus under the auspices of the university's college of pharmacy. The theme of the meeting will be "Pharmacy and Public Health" and the speakers will include:

Mary Grace, Ph.G., New York, The Hospital Pharmacist's Role in Public Health.
Carl R. Addinall, Ph.D., Rahway, N. J., The Pharmaceutical Manufacturer's Contribution to Public Health and the War Effort.
Dr. Walter Clarke, New York, The Pharmacist's Part in the Social Hygiene Program.
Ivor Griffith, Sc.D., Philadelphia, The Retail Pharmacist's Part in Public Health and the War Effort.

Program to Reduce Home Accidents.—A series of ten teacher training lectures on home safety opened in various health centers on March 20 under the auspices of the city department of health, the Greater New York Safety Council and the National Safety Council. The lectures will continue weekly until June 9 and will serve as a training course for health department personnel to instruct others in home safety. During the course all students will study and report causes of home accidents. The project is financed by the National Safety Council in the expectation that it will develop a pattern of effective home accident prevention methods which subsequently may be used throughout the United States. The lectures, with visual demonstrations of home accident causes and methods of prevention, have been developed, and a teaching staff of about 40 recruited, organized and trained by the Greater New York Safety Council. Classroom and teaching facilities are provided by the city department of health.

OHIO

Tri-State Medical Meeting.—The seventy-first annual meeting of the Northern Tri-State Medical Association will be held at the Commodore Perry Hotel, Toledo, April 11. The meeting will be opened with addresses by Drs. Paul M. Holmes, president, Toledo Academy of Medicine, and E. Benjamin Gillette, Toledo, president of the Northern Tri-State Medical Association. Other speakers will include:

Dr. Gordon B. Myers, Detroit, Chemotherapy.
Dr. Robert A. Hettig, Ann Arbor, Mich., Postwar Medical Problems Relative to Tropical Diseases.
Drs. Karl D. Figley, Toledo, Milton B. Cohen, Cleveland, and Stanley W. Insley, Detroit, The Management of the Asthmatic.
Dr. Henry C. Hesseltine, Chicago, Caudal Anesthesia.
Dr. Marion A. Blankenhorn, Cincinnati, Diagnosis and Treatment of Medical Shock.
Dr. Nathan S. Davis, Chicago, The Role of Biochemistry in the Etiology and Treatment of Cardiovascular Renal Disease.
Dr. Walter E. Dandy, Baltimore, Diagnosis and Treatment of Ruptured Intervertebral Disks.
Dr. Wallace E. Herrell, Rochester, Minn., Penicillin.

The Northern Tri-State Medical Association is composed of the states of Indiana, Michigan and Ohio.

SOUTH CAROLINA

State Medical Meeting.—The annual session of the South Carolina Medical Association will be held at the Columbia Hotel, Columbia, April 11-12, under the presidency of Dr. William Atmar Smith, Charleston. A banquet session will be addressed by Dr. Harry S. Mustard, professor of public health practice and director of the De Lamar Institute of Public Health of Columbia University College of Physicians and Surgeons, New York. Among other speakers on the program will be:

Dr. Mylnor W. Beach, Charleston, Trend of Immunization in Present Day Pediatrics.
Dr. William H. Kelley, Charleston, Specific Chemotherapy in Bacterial Infections.
Dr. James C. McLeod, Florence, The Use of Sulfonamides in Surgery.
Dr. Edgar A. Hines Jr., Rochester, Minn., The Prevention and Treatment of Thrombosis and Embolism.
Dr. Roderick MacDonald, Rock Hill, Headache from an Eye, Ear, Nose and Throat Standpoint.
Dr. Joseph D. Guess, Greenville, Practical Obstetrics.
Dr. Roger G. Doughty, Columbia, The Problem of Ruptured Invertebral Disks.
Dr. Oscar Z. Culler, Orangeburg, The Treatment of Diabetic Coma.
Dr. Thomas B. Sprunt, Baltimore, The Management of Thyrotoxicosis.

TENNESSEE

State Medical Meeting.—The Tennessee State Medical Association will hold its one hundred and tenth annual meeting in the Noel Hotel, Nashville, April 11-13, under the presidency of Dr. Oval N. Bryan, Nashville. According to the preliminary program, the meeting will open with an evening session to be addressed by Dr. Bryan, Dr. James E. Paullin, Atlanta, President of the American Medical Association, and Brig. Gen. Hugh J. Morgan, consultant to the Surgeon General of the army. Among the guest speakers will be:

Dr. Frank E. Whitacre, Sylvania, Ohio, Some Complications of Obstetrics as Seen in China.
Dr. Louis A. Buie, Rochester, Minn., A Colored Motion Picture of Normal and Abnormal Conditions in the Terminal Portion of the Colon, with Comments.
Dr. Austin E. Smith, Secretary, Council on Pharmacy and Chemistry, American Medical Association, Chicago, Drugs on the Market.
Dr. Carl M. Peterson, Secretary, Council on Industrial Health, American Medical Association, Chicago, Industry Needs the Physician.
Dr. J. R. Bromwell Branch, Macon, Ga., Benign Obstructive Lesions in the Right Lower Quadrant.
Dr. Charles H. Mann Jr., New York, Practical Aspects of the Management of Lymphogranuloma Venereum.

The program will conclude with a symposium on the venereal disease problem by Drs. Herman Spitz, Nashville; J. Logan Morgan, Memphis; Rudolph H. Kampmeier, Nashville; Emmett R. Hall, Memphis, and Dr. Mann.

TEXAS

Changes in Health Officers.—Dr. Thomas P. Andrews has resigned as health officer of Brownsville.——Dr. Charles A. Wyatt, Marshall, was recently appointed health officer of Harrison County.

New Lectureship at University of Texas.—An annual lectureship under the auspices of the Phi Beta Pi medical fraternity has been established at the University of Texas Medical Branch, Galveston. The first lecture was given on March 25 by Theophilus S. Painter, Ph.D., professor of zoology at the University of Texas, Austin, entitled "A Cytologist Looks Forward."

Pediatric Program.—Dr. Arild E. Hansen, professor of pediatrics, University of Texas Medical Branch, Galveston, and director of the school's child health program, is arranging a pediatric conference at the school, April 7-8, with a group of special speakers, to survey current pediatric problems in the Southwest. On this occasion the first of a series of lectures on pediatrics, sponsored by the William Buchanan Foundation of Texarkana, will be given by Dr. Irvine McQuarrie, professor of pediatrics, University of Minnesota Medical School, Minneapolis.

UTAH

Industrial Hygiene Physician Goes to Washington.—Dr. John L. Jones, Salt Lake City, has resigned as director of the division of industrial hygiene, Utah State Board of Health, to become chief of the medical services of the Washington State Health Department, Seattle, effective March 1. A graduate of Harvard Medical School and the Harvard School of Public Health, Dr. Jones in 1935 served as state health commissioner of Utah. From 1939 to 1941 he was given leave of absence to develop the state's first industrial hygiene program and carry out studies in cooperation with the U. S. Public Health Service. He became director of the new division of industrial hygiene in 1941.

WEST VIRGINIA

Former Health Commissioner Named Medical Director of Compensation Fund.—Dr. William T. Henshaw, Charleston, has been named by Charles L. Heaberlin, state compensation commissioner, as acting medical director for the Workmen's Compensation Fund to succeed Dr. Ernst F. Gott, who will resume private practice in Charleston. Dr. Henshaw served for several years as state health commissioner and has been medical director for the Dravo Construction Company since 1933. Work on the Hinton dam, which is being constructed by the Dravo Corporation, has been discontinued temporarily because of the shortage of vital materials.

Forum on Tropical Diseases.—A feature of the annual meeting of the West Virginia State Health Conference on May 1-2 at Charleston will be a forum on tropical diseases. Various aspects of the diseases to be discussed include clinical diagnosis and therapeutics, laboratory and field control, and etiology and epidemiology. All sessions of the conference, which is a joint meeting of the West Virginia Public Health Association and Health Officers Conference, will be held at the Daniel Boone Hotel. In addition to the forum on tropical diseases there will be the following speakers:

Lucius F. Badger, surgeon, U. S. Public Health Service, Newer Methods of Communicable Disease Control.
Dr. Philip E. Blackerby, Louisville, Ky., Rural Health.
Hortense Hilbert, New York, Nursing.
Dr. Arthur J. Lesser, Washington, D. C., Emergency Maternal and Infant Care Program.
Dr. Udo J. Wile, Ann Arbor, Mich., Venereal Disease Control.

WISCONSIN

Examination for Medical Examiners.—The Milwaukee County Civil Service Commission announces an examination for the position of medical examiner, applications to be filed on or before April 5. The initial salary will be about $390 a month, and acceptance will be determined by an evaluation of training and experience plus an oral interview. Qualified citizens of the United States are eligible. Applicants must be graduates of an approved school and be eligible for a license to practice medicine in Wisconsin. They must have not less than three years of specialized training, exclusive of internship, in an accredited institution or department of pathology, the training to have included not less than one year of various phases of clinical pathology and not less than two years in the department of pathologic anatomy. Additional information may be obtained from the Milwaukee County Civil Service Commission, Room 206, Courthouse, Milwaukee.

Sessions on Industrial Health.—The State Medical Society of Wisconsin, in cooperation with the industrial hygiene unit of the state board of health, has planned a series of afternoon and early evening conferences to be held in six industrialized areas of the state:

April 12, Kenosha, Elks Club.
April 19, Manitowoc, Manitowoc Hotel.
April 25, Oshkosh, Hotel Raulf.
May 2, Green Bay, Hotel Northland.
May 16, Janesville, Y. M. C. A.
May 18, Wausau, Hotel Wausau.

Two teams have been chosen: one from Madison to handle the Oshkosh, Wausau and Janesville meetings; the other from Miwaukee to lecture at Kenosha, Manitowoc and Green Bay. Members of the Madison team are Drs. Henry L. Greene, Chester M. Kurtz, Vincent W. Koch, Helen A. Dickie, Erwin R. Schmidt, Albert R. Tormey and Garrett A. Cooper. Members of the Milwaukee group are Drs. Chester C. Schneider, Elwood W. Mason, Millard Tufts, Arthur A. Schaefer, Joseph M. King, Simpson M. Markson and Oscar A. Sander. Included among the topics of discussion will be:

Treatment of Sprains and Strains.
Cardiac and Hypertension in Industry.
Industrial Disease of the Lungs.
Treatment of Burns.
Treatment of Injuries to the Hands and Feet.
Prevention and Treatment of Industrial Dermatosis.
Health Hazard in Welding.

Among others, Dr. Paul A. Brehm, Madison, supervisor of the industrial hygiene unit of the state board of health, will speak on the importance of postwar planning in relation to the rehabilitation of war veterans in industry.

HAWAII

Dr. McNeil Resigns as Mental Hygiene Director.—Dr. Edwin E. McNeil, Honolulu, who left Hawaii last September on vacation and a six months leave of absence, has resigned as director of the bureau of mental hygiene, of the Territory of Hawaii Board of Health, effective February 15. Dr. William M. Shanahan, Honolulu, has been acting director of the bureau.

GENERAL

National Negro Health Week. — The week beginning April 2 has been designated National Negro Health Week to promote the health and well-being of Negroes. A national observance will be carried out under the auspices of the U. S. Public Health Service.

Wartime Public Health Conference. — The American Public Health Association announces that its second wartime public health conference and its seventy-third annual business meeting will be held in the Pennsylvania Hotel, New York, October 3-5. Meetings of related organizations will take place on October 2. The scientific program will be devoted to wartime emergency matters as they affect public health.

Medals Awarded for Orthopedic Exhibits. — At the recent annual meeting of the American Academy of Orthopaedic Surgeons three gold medals were awarded, one to Dr. James E. M. Thomson, Lincoln, Neb., for his exhibit showing originality of presentation and research problems entitled "'Local Shock' Influence of Novocain Sympathetic Block." Another medal for scientific importance and information went to Dr. William T. Green, Boston, for his exhibit on "Skeletal Manifestations of Neurofibromatosis" and a medal for clinical value to Col. John L. Gallagher, M. C., U. S. Army, for his exhibit on "Compression Therapy Dressings." Dr. Guy W. Leadbetter, Washington, D. C., was chosen president-elect of the academy and Dr. E. Bishop Mumford, Indianapolis, was inducted into the presidency. Other officers include Drs. H. Earle Conwell, Birmingham, Ala., vice president; Fremont A. Chandler, Chicago, treasurer, and Myron O. Henry, Minneapolis, secretary. The academy will hold its next annual meeting at the Palmer House, Chicago, Jan. 21-24, 1945.

Panel Named to Assist in Placing of Veterans in Industry.—The Industrial Hygiene Foundation has announced that a panel of five members will function as an advisory board for the placement of veterans in industry. The panel consists of Dr. Clarence D. Selby, medical consultant, General Motors Corporation, Detroit; Col. John H. Andrews, executive officer, Reemployment Division, National Selective Service System, Washington, D. C.; Dr. Harley L. Krieger, medical director, Ford Motor Company, Detroit; A. A. Hendrix, personnel director, Eastern Aircraft Division, General Motors Corporation, Linden, N. J., and I. Dent Jenkins, personnel manager, Harrison Radiator Division, General Motors Corporation, Lockport, N. Y. The action was taken after the release of the comprehensive report by the Industrial Hygiene Foundation on "Putting the Disabled Veteran Back to Work." It is stated that the five man panel will serve the foundation's membership and industry generally as an unofficial vehicle for the exchange of practical experience and information.

Award to Encourage Writing of Medical Books for Laymen.—W. W. Norton & Company has established a new literary award to be known as the Norton Award to consist of $3,500 and "offered to encourage the writing of books on medicine and the medical profession for the layman." According to an announcement the publishers, whose list is characterized by some authoritative books on medical subjects, feel that medical men, like other scientific workers, write for one another for the most part, and the layman is consequently too often forced to resort to nonprofessional popularizers. In announcing this award they have in view the need for books on various aspects of medical science, written by professional workers in the medical field in such a way as to interest the general reading public. The subject matter to be considered may be autobiography, biography, history of any phase of medicine, exposition of medical science or of medical theory. Complete information and entry blank for this award may be obtained by addressing the Norton Award, W. W. Norton & Company, Inc., 70 Fifth Avenue, New York 11. Final date for delivery of manuscripts is Dec. 31, 1944.

Chest Physicians Hold Regional Meetings.—The North Midwest Regional District of the American College of Chest Physicians will sponsor a meeting during the annual session of the Minnesota State Medical Association in Rochester, April 15. Among the speakers will be:

Dr. Sidney A. Slater, Worthington, Minn., Practical Points in the Diagnosis of Pulmonary Tuberculosis.
Dr. John F. Allen, Omaha, Development of Therapy in Tuberculosis During the Last Twenty-Five Years.
Dr. Horton C. Hinshaw, Rochester, Present Status of Chemotherapy in Tuberculosis.
Dr. Karl A. Danielson, Litchfield, Minn., "All Out" Tuberculosis Control by the Medical Profession.
Dr. William L. Meyer, Sanator, S. D., Sarcoidosis.
Dr. Leonard W. Moody, Bayfield, Wis., Case Reports.
Dr. J. Winthrop Peabody, Washington, D. C., Transitory, Migratory Pulmonary Infiltrations Associated with Eosinophilia.

The New Jersey chapter will meet during the session of the Medical Society of New Jersey at the Hotel Claridge, Atlantic City, April 26. The Ohio chapter will hold a luncheon session at the Deshler-Wallick Hotel, Columbus, May 3, in connection with the annual meeting of the Ohio State Medical Association.

LATIN AMERICA

Health Activities in Latin America. — The presence of high yielding Ecuadorian sources of quinine has been reported by William C. Steere, Ph.D., botanist attached to the U. S. Foreign Economic Administration mission in Quito, Ecuador. The high yielding plant is known as Cinchona pitayensis, or yellow bark, and was known previously only in Colombia. According to the Office of the Coordinator of Inter-American Affairs, wild bark is being brought out of the Ecuadorian forests, nurseries are developing plantations and factories in Quito are processing the bark for shipment to the United States.

Health Education.—A new motion picture on prevention of blindness entitled "Eyes for Tomorrow," produced by the Emerson Yorke Studio for the National Society for the Prevention of Blindness, will be released throughout Latin America under the auspices of the Office of the Coordinator of Inter-American Affairs. This version will be slightly altered to the original release in the United States and will have Spanish and Portuguese sound tracks. The film deals with the importance of antepartum care as a means of reducing the amount of blindness caused by syphilis and gonorrhea, the conservation of vision among school children, the use of sight-saving classes for children with seriously defective vision, the necessity for regular eye examinations, methods of treating glaucoma and trachoma and the eye hazards of industry.——Fifteen minute broadcasts four times a week of instruction in public health nursing were started recently in Bolivia.

Texas Physician Honored.—Dr. James L. Rentfro, Brownsville, was guest of honor at a banquet given by the Matamoros Medical Association, Tamaulipas, Mexico, in recognition of his work among the Latin American people on both sides of the Rio Grande. Dr. Roberto Perez M., president of the Matamoros Medical Association, presided at the dinner, which was attended by members of the profession from Texas and Mexico. Dr. Rentfro was presented with a certificate of merit signed by all members of the Matamoros Medical Association. Nelson R. Park, American consul, in a communication to the Department of State said that it is believed to be the first occasion on which the Matamoros doctors have honored a physician of Brownsville.

Medical Care for Sisal Workers.—Through an arrangement with Haiti's special health service, workers on the largest sisal plantation in the Western Hemisphere, known as the La Plantation Dauphin and located in Haiti, are being given special care under the Inter-American health and sanitation program. Physicians and engineers have been assigned to the project, which includes drainage of malarial swamps, improvement of water supply, establishment of small medical dispensaries and construction of additional housing facilities.

Personal.—Dr. Pablo Mirizzi, professor of clinical surgery of the University of Cordoba, Argentina, was recently presented by the University of Brazil with the degree of professor honoris causa. Special ceremonies were held at the National Faculty of Medicine at Rio de Janeiro.——Dr. Antonio Augusto de Almeida was recently elected president of the Medical Association of the Penido Burnier Institute, Campiras, São Paulo, Brazil.——Dr. José A. Hernández Ibañez was chosen president of the Sociedad Cubana de Urologia.——Dr. Alberto Recio-Forn, Havana, has been appointed minister of health of Cuba.

Tuberculosis Control.—Dr. Joseph S. Spoto, traveling represensative of the Pan American Sanitary Bureau, reports in the *Bulletin* of the National Tuberculosis Association that an agreement has been reached by the federal health department of Mexico, the chief of party of Mexico, Office of the Coordinator of Inter-American Affairs and the Pan American Sanitary Bureau, to initiate a tuberculosis control program on the northern border of Mexico.

Deaths in Other Countries

Dr. William W. C. Topley, professor of bacteriology and immunology in the University of London and director of the division of bacteriology and immunology, London School of Hygiene and Tropical Medicine from 1927 to 1941, died January 21, aged 57. Dr. Topley devoted himself to the investigation of the factors which influence the spread of bacterial infection, and he invented and used entirely new methods for the study of epidemics in a population of laboratory mice. He was one of the first to use experimental methods in the study of epidemics, and he became an authority on the subject.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 26, 1944.

Canadian Neurologic Hospital in Britain

Establishment of a Canadian neurologic hospital for the troops in Britain was described at the Neurologic Section of the Royal Society of Medicine by Lieut. Col. J. C. Richarson. A new organization for dealing with neurologic patients was hailed as an important advance by the experts who took part in the discussion. The hospital was opened in 1940 with 200 beds for the treatment of head injuries. Needs not originally foreseen caused a steady expansion until in July 1943 the hospital had 600 beds, of which 150 were devoted to plastic surgery and 250 to neuropsychiatric maladies. The vast majority of the patients were Canadian soldiers and a considerable number Canadian airmen, but there were a few civilians and British service patients. Mild or severe mental disorders comprised 70 per cent of the cases, neurologic disorders without permanent mental disturbance 19 per cent and general medical disorders 8 per cent. The largest group (1,625 of 4,436 cases in three years) comprised psychoneuroses, about half the number being anxiety states. Patients with psychopathic personality numbered 646, psychoses 507 (chiefly schizophrenia 355 cases) and mental defectives 306. Of the cases of neurologic disease (828) the largest number (275) were cases of epilepsy and the next most numerous neurosyphilis (117).

The reported experience of the hospital was that neurology, psychiatry and neurosurgery, when planned as different components of one broad field of medical practice, offered the advantage of cooperative handling from the points of view of clinical investigation, diagnosis, treatment and postgraduate training. Such organization helped to break down the artificial barrier between the neurologist and the psychiatrist. Neuropsychiatry, it was pointed out, had been called on to play a much larger part in the selection of troops and allocation of personnel, including choice of candidates for commissions, than was originally anticipated. It was felt that the experience of this military neuropsychiatric division would be of lasting value in planning improvements in teaching hospitals and in directing attention to the psychiatric aspect of somatic illness.

In the discussion, Brig. Gen. George Riddoch, a British neurologist, said that this Canadian experiment would have an immense influence in planning for the future. The term which best described the hospital organization, he said, was "common sense." Sir Henry Tidy praised the liaison between neurology and psychiatry and stated that it would be to the mutual advantage of psychiatry and general medicine if they were as closely in touch.

Proposed Clinic for Advice in Infertile Marriages

The Social Biology Board of the British Social Hygiene Council proposes to establish in London a special clinic at which both partners of an infertile marriage can obtain expert advice. This clinic would be run on the same lines as the voluntary hospitals. Specialists would give their services voluntarily. An appeal is being made for the necessary funds. It is estimated that $25,000 will be needed before the clinic can be equipped and started, but it is believed that by charging fees on a sliding scale to those who can afford them, the clinic would become self supporting within a comparatively short time.

The Social Biology Board has agreed to promote this undertaking under the supervision of its finance committee, provided the public will contribute the funds necessary for establishing the clinic. It is intended that the clinic should be open to all patients, general practitioners, hospitals and other institutions desiring to make use of its services. It would be equipped with all the apparatus necessary for diagnosis and would be prepared either to supply treatment or to guide the treatment given by the patient's private doctor. In previous letters the concern felt at the approaching decline of our population has been shown. Means for opposing this tendency have been suggested, and this new clinic is evidently designed as a contribution to that end. The serious view taken by some as to the population decline is illustrated by the speech of W. R. Inge, formerly dean of St. Paul's Cathedral and a well known publicist. At a commemorative luncheon of the Ruskin Society he said that our period as a great and wealthy nation had come to an end. We would gradually slide back, he said, into the equivalent of preindustrial England, with a population of 20 million, mainly agriculturists and small tradesmen in the towns. But Dr. Inge's pronouncements have earned for him the sobriquet of "the gloomy dean," and his forecast is regarded by most observers here as an exaggeration of a real danger.

Campaign to Prevent Introduction of Malaria into Pacific Islands

A new campaign against the Anopheles mosquito which carries the malaria parasite is to be launched in the Southwest Pacific. If malaria should be introduced into the islands there, which at present are free from infection, it might cause as many casualties as the war against Japan. The scheme is to be financed under the colonial development and welfare act of 1940, and an initial grant of $325,000 to cover three years' work has been made for the purpose. The Anopheles mosquito has hitherto been unknown in Fiji, Tonga, the Cook islands, the Loyalty islands, New Caledonia, the Gilbert and Ellice islands and Samoa. On the other hand, malaria is widely distributed in the islands to the west of Fiji. Since the outbreak of war the establishment of large garrisons and the increase of air and sea traffic between the islands has greatly increased the danger of introducing malaria into islands hitherto free from it.

A start has been made with entomologic surveys near shores and ports and reconnaissance surveys of all potential breeding grounds. Normal anti-mosquito work will be intensified and danger places will be cleared, drained and oiled when necessary. At the same time an engineer will prepare a program for mosquito control on a long term basis.

The Production of Penicillin

The discovery of penicillin was made by Prof. Alexander Fleming, assistant director of inoculation in the Research Department of St. Mary's Hospital. Its use was developed by Prof. H. W. Florey. It is now being produced in large quantities in this country and the United States. Professor Florey has gone to Russia to direct its production there. Directions for its production have been flown to China.

Up to the present time penicillin has been manufactured only by biologic, as distinct from chemical, methods. The Therapeutic Research Corporation of Great Britain, which was established in 1941, has organized a pooling of research among the principal British drug houses. Subsequently the Medical Research Council and the Committee on Medical Research in the United States arranged for the regular exchange of information between teams of workers in the universities and industrial laboratories and other institutions on both sides of the Atlantic.

The activities of the institutions and undertakings concerned are coordinated with the various interested ministers and service departments in the General Penicillin Committee of the Ministry

of Supply. There is nothing of the nature of a monopoly in this organization, but there is full mobilization of the appropriate skill and talent of Britain and the United States for speeding the solution of the problem of manufacture of the supplies of penicillin which are so vitally needed.

BUENOS AIRES

(From Our Regular Correspondent)

Feb. 19, 1944.

Medical Aid to Victims of San Juan Earthquake

San Juan, the capital of San Juan province, was demolished by an earthquake in January. More than 5,000 persons were injured. The government, the national department of public health and the medical profession gave immediate medical care to the victims and established the necessary hygienic measures to prevent epidemics. The physicians of Cordoba and Mendoza came immediately to San Juan. Dr. Eugenio A. Galli, head of the national department of public health, with a large group of public health physicians, left Buenos Aires as soon as the department was informed of the disaster and reached San Juan within twenty hours. The wounded were evacuated in airplanes to Mendoza province. Vaccination against epidemic diseases was administered. Large groups of medical delegations from the various states of Argentina as well as from Chile, Uruguay and Paraguay reached San Juan soon after the earthquake. Offerings of any kind of help were made by the American government and the American Red Cross and notes of condolence were sent to the victims' families.

Venereal Diseases in Buenos Aires

Dr. Osvaldo D. Dodero of Buenos Aires reviewed statistics of various hospitals in Buenos Aires on the frequency of syphilis before and after establishment of the laws of 1936 and 1937 for abolition of prostitution in Argentina. The figures in the accompanying table were included in the report.

Patients with Venereal Disease Treated in Buenos Aires

	1932	1937	1938	1939	1940	1941	1942	1943
At 16 public health dispensaries for men:								
Syphilis	3,048	1,615	1,102	782	802	716	739	396
Gonorrhea	8,929	5,948	5,009	4,525	4,307	4,286	4,536	2,958
Other venereal diseases	3,742	2,992	3,164	3,163	3,223	3,762	4,352	2,517
At 7 dispensaries in private hospitals:								
Syphilis	2,681	2,343	1,827	1,713	1,582	1,517	1,397	650
Gonorrhea	6,016	4,301	3,953	3,045	3,314	4,729	5,551	2,671
Other venereal diseases	3,974	6,945	7,613	6,519	6,914	7,171	7,531	3,591

The figures for 1943 were for the six months from January to June. The figures given reflect the good results of the law against prostitution. According to Dr. Dodero, syphilis has recently increased in some provinces in which enforcement of the law was neglected. Sexual delinquency has also diminished during the last five years, it is reported.

Pulmonary Emphysema

Drs. Egidio S. Mazzei and Jorge M. Remolar of the Instituto de Investigaciones of the Academia de Medicina of Buenos Aires have recently published a book on the clinical, x-ray and therapeutic aspects of pulmonary emphysema. The clinical symptoms, x-ray signs and bronchographic findings in functional (or reversible) anatomic and bullous pulmonary emphysema caused by bronchial obstruction are discussed. The conception of symptomatic emphysema in various diseases and the causal role of the valvular mechanism in the production of the disease by intrabronchial cancer, tuberculosis and other diseases of the respiratory tract are explained. Bullous emphysema is the last stage of obstructive emphysema with valvular mechanisms. The differential diagnosis between this type of pulmonary emphysema and other diseases which simulate it is discussed. In the field of experimental pulmonary emphysema the conceptions of Paine of Minneapolis concerning the importance of the valvular mechanism during expiration are confirmed. Various chapters deal with the clinical symptoms of respiratory, circulatory and nervous complications and with the diagnosis, prognosis and therapy of the various forms of the disease.

Brief News

Members of the Academia Nacional de Medicina of Buenos Aires recently held a literary reunion in honor of Dr. Emile Sergent, who recently died.

Dr. Leo Eloesser of the surgical clinic of the University of San Francisco recently returned home after having delivered exchange lectures in Argentina.

Dr. Germán Hugo Dickmann, head of the department of neurosurgery of the Rawson Hospital of Buenos Aires, recently left Argentina for the United States, at the invitation of Dr. Walter E. Dandy of the Johns Hopkins Hospital, Baltimore.

A donation was made by the Argentine public on Christmas day by sale of the so-called stamps of Navidad. The money thus collected is used in work against tuberculosis. In the 1942 collection $12,500 was obtained by this means.

Literary festivities and social entertainment on January 4 celebrated the fiftieth anniversary of *La semana médica* of Buenos Aires. A special illustrated issue of this journal is in preparation as part of the celebration.

Literary festivities were held on Dec. 17, 1943 by the Society of the History of Medicine, a branch of the Asociación Médica Argentina, in homage to Robert Koch on the one hundredth anniversary of his birth. Drs. Pablo Osvaldo Wolff and Ramon Pardal made addresses in his memory.

Literary festivities are being prepared for Oct. 16, 1946 in honor of William T. G. Morton to celebrate the centennial of surgical anesthesia.

Dr. Egidio S. Mazzei was appointed president of the Sociedad de Medicina Interna, which is a branch of the Asociación Médica Argentina.

Deaths

Dr. Carlos Mainini, 64 years of age, who was a well known specialist on tuberculosis and the president of the Asociación Médica Argentina from 1936 to 1942.——Dr. Juan Raul Goyena, gastroenterologist, professor of clinical medicine of the Faculty of Medicine of Buenos Aires.——Dr. Desiderio Fernando Davel of Buenos Aires, founder in 1886 of the Pasteur Laboratory in Buenos Aires, who taught in Argentina the methods for prevention and therapy of hydrophobia.

Aerial Accident

A grave aerial accident occurred at the Mendoza airdrome involving a Chilean airplane which had been lent to Argentina by the Chilean government. Several physicians of both countries were among those killed in the accident.

Marriages

FRANCIS WILLOUGHBY TRAYNOR, Cumberland, Md., to Miss May Agnes Skinner of Charleston, S. C., in Baltimore, February 28.

JOSEPH COOKE ORMAN, Nashville, Tenn., to Miss Margaret Josephine Griesbeck of Memphis, February 21.

FAY ASHTON CARMINES, Odd, Va., to Miss Lillie Weeks Burns of Goldsboro, N. C., March 4.

JOSEPH J. GELLER, Elizabeth, N. J., to Miss Anna Marie O'Keefe in New York, December 21.

JOSEPH H. LUCINIAN to Mrs. B. Edna Roberts, both of Miami, Fla., December 25.

Deaths

William Beall Carrell ✠ Dallas, Texas; Southwestern University Medical College, Dallas, 1908; instructor of histology and pathology at his alma mater, later known as the Southern Methodist University Medical Department, 1909-1910, professor of pathology, 1911-1912, and professor of theory and principles of surgery from 1912 to 1915; instructor in orthopedic surgery at the Baylor University College of Medicine, 1920-1921, assistant professor from 1921 to 1923, associate professor from 1923 to 1933 and professor from 1933 to 1943; since the latter date professor of orthopedic surgery at the Southwestern Medical Foundation; specialist certified by the American Board of Orthopaedic Surgery, Inc.; served as president of the Texas Orthopedic Association; member and past president of the Clinical Orthopaedic Society; member of the American Orthopaedic Association, American Academy of Orthopaedic Surgeons and the International Orthopedic Association; one of the organizers of the Texas Society for Crippled Children; fellow of the American College of Surgeons; served as a captain and later as a major in the medical corps of the U. S. Army during World War I; member of the committee on research for the prevention and treatment of after-effects, National Foundation for Infantile Paralysis; chief surgeon of the Texas Scottish Rite Hospital for Crippled Children; on the staffs of the Baylor University Hospital, Parkland Hospital, St. Paul's Hospital and the Methodist Hospital; in 1926 was given the Dallas Service Award; in 1937 appointed to a board to advise the crippled children's division of the state department of education; died February 23, aged 60, of heart disease.

Claude Connor Pierce ✠ Medical Director, U. S. Public Health Service, retired, New York; Chattanooga (Tenn.) Medical College, 1898; in 1942 appointed medical director of the Planned Parenthood Federation of America, Inc., formerly known as the Birth Control Federation of America, Inc.; joined the U. S. Public Health Service as an assistant surgeon in 1900 and retired in 1942; became a passed assistant surgeon in 1905, surgeon in 1912, senior surgeon, by act of congress, in 1915, and assistant surgeon general in 1918; placed in charge of the division of venereal diseases of the public health service in Washington, D. C., July 11, 1918; director in charge of district number 3, Chicago, from 1922 to 1926 and later regional director in charge of district number 1, New York; quarantine officer in Panama from 1904 to 1914 and superintendent of the Colon Hospital in 1913; prepared the exhibit of U. S. Public Health Service for the San Francisco exposition in 1915; in 1916 established disinfection plants along Texas-Mexico border to prevent the introduction of typhus; in charge of extracantonment sanitation in Little Rock, Ark., in 1917; medical director in supervisory charge of the U. S. Public Health Service activities in Europe from 1934 to 1937; veteran of the Spanish-American War; member of the Association of Military Surgeons of the United States and the American Society of Tropical Medicine; died in the U. S. Marine Hospital, Stapleton, March 19, aged 65.

William Turney White ✠ Dallas, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1906; at one time clinical professor of surgery and associate professor of clinical gynecology at the Baylor University College of Medicine; formerly lecturer on fractures and dislocations at the Southwestern University Medical College, later known as the Southern Methodist University Medical Department, where he was assistant to chair of surgery; formerly a member of the city board of health; fellow of the American College of Surgeons; on the staffs of the Baylor University Hospital, Gaston Hospital and Medical Arts Hospital; on the consulting staffs of St. Paul's Hospital, Methodist Hospital and the Children's Hospital; chief surgeon, Richmond Freeman Memorial Clinic; died February 27, aged 65.

Francis Patten Emerson, Franklin, Mass.; College of Physicians and Surgeons, New York, 1886; member of the Massachusetts Medical Society, American Laryngological, Rhinological and Otological Society and the American Otological Society, Inc.; fellow of the American College of Surgeons; secretary, Section on Laryngology, Otology and Rhinology, American Medical Association, from 1913 to 1916 and chairman, 1916-1917; specialist certified by the American Board of Otolaryngology; formerly instructor in otology at his alma mater; at one time aural surgeon at the Massachusetts Eye and Ear Infirmary and the Massachusetts General Hospital, Boston; on the staffs of the Brooks Hospital, Brookline, and the Massachusetts Women's Hospital, Boston; died January 19, aged 82, of cerebral hemorrhage.

William Jacobsohn ✠ New York; University of the City of New York Medical Department, New York, 1893; an Affiliate Fellow of the American Medical Association; fellow of the American Public Health Association; member of the city board of health from 1914 to 1934, serving in the division of sanitary and industrial hygiene, child hygiene, preventable diseases and health education; attending physician, children's department, Demilt Dispensary, 1894-1895; consulting physician, Odd Fellows Home and Orphan Asylum, in 1896; physician and surgeon at the New York Polyclinic Medical School and Hospital and Mount Sinai Hospital from 1896 to 1904; physician, department of children's diseases, Lebanon Hospital, from 1910 to 1915; died in the Beth David Hospital March 10, aged 73.

Charles Louis Glaessner ✠ New York; Deutsche Universität Medizinische Fakultät, Prague, Austria, 1900; at one time professor of internal medicine at the University of Vienna; for many years chief and director of medicine at the Rainer Hospital and the Francis Joseph Hospital in Vienna; honorary member of the American Gastroenterological Association; had been appointed counselor to the Austrian government; received the decoration of Officer of the Legion of Honor from the French government; recently appointed associate clinical professor of medicine at the New York Medical College, Flower and Fifth Avenue Hospitals; on the staffs of the New York City Hospital and the New York Polyclinic Medical School and Hospital; died February 26, aged 67.

Ralph Stephen Chappell ✠ Indianapolis; Medical College of Indiana, Indianapolis, 1904; assistant professor of otolaryngology at the Indiana University School of Medicine; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; one of the organizers and for many years president of the Indianapolis League for the Hard of Hearing; consulting otolaryngologist and secretary of the board of trustees of the Indiana State School for the Deaf; on the staffs of the Indianapolis City Hospital, Methodist Episcopal Hospital, St. Vincent's Hospital and the Robert W. Long Hospital, where he died March 12, aged 64.

Horace Jose Binford ✠ Mexico, Maine; University of Vermont College of Medicine, Burlington, 1885; served as postmaster of North Sandwich, N. H.; for thirteen years a member of the board of selectmen of Mexico, a member of the school committee and town treasurer; served as school physician and member of the board of health for many years; at the annual meeting of the Maine Medical Association in June 1935 was presented with a gold medal in recognition of his services as a practicing physician for fifty years; on the staff of the Rumford Community Hospital, Rumford, where he died January 15, aged 87, of atypical lobar pneumonia, which developed after a fall in October 1943.

James Alphonsus Kelly ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1901; associate professor of surgery at the Medical-Chirurgical College, Graduate School of Medicine, University of Pennsylvania; a member of the founders group, American Board of Surgery; fellow of the American College of Surgeons; member of the College of Physicians of Philadelphia and the Philadelphia Academy of Surgery; Villanova College conferred on him an honorary LL.D. degree; on the staffs of the Fitzgerald-Mercy Hospital, Darby, St. Mary's Hospital, St. Joseph's Hospital and the Misericordia Hospital, where he died March 7, aged 66, of mesenteric thrombosis.

William Graves Townsend ✠ Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1924; professor of urology at his alma mater; specialist certified by the American Board of Urology, Inc.; member of the New England Surgical Society, American Neisserian Medical Society and the American Urological Association; fellow of the American College of Surgeons; member of the chamber of commerce; served with the intelligence service in France during World War I; consulting urologist, Bishop De Goesbriand Hospital, and the Fanny Allen Hospital, Winooski; attending urologist, Mary Fletcher Hospital, where he died February 11, aged 47, of pneumonia.

Ellis Saunders Allen Jr. ✠ Louisville, Ky.; University of Louisville School of Medicine, 1934; fellow of the American College of Surgeons; commissioned a first lieutenant in the medical corps, Army of the United States, May 5, 1942 and began extended active duty on May 15, 1942 at O'Reilly General Hospital, Springfield, Mo.; later promoted to captain; discharged on Sept. 9, 1943 because of physical disqualification; served on the staffs of the Kentucky Baptist Hospital, Methodist Deaconess Hospital and St. Anthony's Hospital; died in St. Vincent Hospital, Jacksonville, Fla., January 13, aged 35, of tumor of the brain.

James Mortimer Hoffman ✠ Pensacola, Fla.; Tulane University of Louisiana School of Medicine, New Orleans, 1920; member of the Southeastern Surgical Congress, the South Atlantic Association of Obstetricians and Gynecologists and the Radiological Society of North America, Inc.; fellow of the American College of Surgeons; past president and secretary of the Escambia County Medical Society; served as president of the staff of the Pensacola Maternity Home and also on the regular staff; on the staff of the Pensacola Hospital; died January 19, aged 43, of coronary thrombosis.

James W. Ames, Detroit; Howard University College of Medicine, Washington, D. C., 1894; formerly a member of the state legislature; for many years a member of the county board of supervisors and chief diagnostician for the city board of health; medical director of the Trinity Hospital; died January 31, aged 79, of coronary heart disease and essential vascular hypertension.

David Elmer Arnold, San Francisco; College of Physicians and Surgeons of Chicago, 1893; served during World War I; formerly associated with the U. S. Veterans Bureau; died January 5, aged 76, of carcinoma of the prostate.

Homer Moon Austin ✠ Columbus, Ohio; Medical College of Ohio, Cincinnati, 1902; served during World War I; at one time chief of the division of hygiene of the state department of health; formerly superintendent of the Licking County Tuberculosis Sanatorium, Newark, Ohio, and assistant superintendent of the Clark County Tuberculosis Hospital, Springfield; on the staff of the Columbus State Hospital; died January 20, aged 73, of coronary occlusion.

Frank F. Barthmaier, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1910; served during World War I; on the staffs of the Women's Homeopathic Hospital and the Hahnemann Hospital, where he died recently, aged 56, of hypertensive heart disease.

Daniel Hughes Bell, Tacoma, Wash.; University Medical College of Kansas City, Mo., 1903; member of the Washington State Medical Association and the Pacific Coast Oto-Ophthalmological Society; past president of the Puget Sound Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; at one time superintendent of schools at Amarillo, Texas; on the staff of St. Joseph's Hospital and on the surgical staff of Tacoma General Hospital, where he died recently, aged 72, of cerebral thrombosis.

Daniel L. Bevan, Le Roy, Pa.; College of Physicians and Surgeons, Baltimore, 1908; member of the Medical Society of the State of Pennsylvania; at one time on the staff of the Robert Packer Hospital, Sayre; on the staff of the Tioga County General Hospital, where he died January 26, aged 62.

Robert Henry Black, Blackford, Ky.; University of Louisville Medical Department, 1886; died January 11, aged 82, of pneumonia.

Franklin Virginius Boyd, Opelousas, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1902; member of the Louisiana State Medical Society; director of St. Landry Parish health unit; formerly health officer of Lake Providence; past president of St. Landry Parish Medical Society; died January 30, aged 64, of cardiac dilatation.

Samuel S. Briggs, Nashville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1889; for many years professor of anatomy at his alma mater; died January 28, aged 76, of heart disease.

Nathan Stephen Brody, Brooklyn; University and Bellevue Hospital Medical College, New York, 1924; member of the Medical Society of the State of New York; served on the staffs of the Crown Heights, Madison Park and Israel Zion hospitals; died in Miami Beach, Fla., in January, aged 43.

Fletcher Hastings Brooks ✠ Surgeon, Lieutenant Commander, U. S. Navy, retired, San Diego, Calif.; Baltimore Medical College, 1902; member of the Medical Association of Georgia; entered the U. S. Navy on July 22, 1905 and retired March 13, 1924; at one time director of the John D. Archbold Memorial Hospital, Thomasville, Ga.; died in the U. S. Naval Hospital January 27, aged 68, of carcinoma.

Howard D. Brothers, Agra, Kan.; Omaha Medical College, 1883; died recently, aged 83.

Elbridge L. Busby, Henderson, Ky.; Kentucky School of Medicine, Louisville, 1903; member of the Kentucky State Medical Association; at one time superintendent of the Central State Hospital, Lakeland, and the Western State Hospital, Hopkinsville; died in the Protestant Deaconess Hospital, Evansville, Ind., January 24, aged 65.

Alfred Cahn, Mannsville, N. Y.; Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany, 1903; died January 17, aged 64.

James Phaon Caldwell, St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1909; member of the Minnesota State Medical Association; on the staffs of St. Luke's Hospital, St. John's Hospital and the Midway Hospital, where he died January 20, aged 60, of lymphosarcoma.

Frank A. Cavanaugh, South Haven, Kan.; Eclectic Medical Institute, Cincinnati, 1894; member of the Kansas Medical Society; died in Toledo, Ohio, January 18, aged 83, of myocarditis.

Herbert Augustus Chase, Cambridge, Mass; Boston University School of Medicine, 1876; at one time a vice president of the Wildey Savings Bank of Boston; died January 27, aged 93, of myocarditis and bronchopneumonia.

Franklin Higby Church ✠ Salem, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1906; for many years county physician; on the staff of the Salem County Memorial Hospital; chief clinician, Salem County Social Disease Clinic; at one time physician to an expedition to South America for the University of Pennsylvania; died January 24, aged 63, of diabetes mellitus.

Frederick S. Clapp, Middlefield, Ohio; Western Reserve University Medical Department, Cleveland, 1884; died in St. Luke's Hospital, Cleveland, January 1, aged 80, of uremia.

Constant Moreaux Colignon ✠ Muskegon, Mich.; Rush Medical College, Chicago, 1914; fellow of the American College of Surgeons; past president of the Muskegon County Medical Society; served overseas as a captain in the medical corps of the U. S. Army during World War I; on the surgical staff and vice chief of staff for many years, Mercy Hospital; on the surgical staff of the Hackley Hospital; organized and directed the medical department of Campbell, Wyant and Cannon Foundry Company; died January 21, aged 53.

Charles A. Crane, Corunna, Mich.; Detroit College of Medicine, 1891; member of the Michigan State Medical Society; past president of the Shiawassee County Medical Society; formerly coroner of Shiawassee County and chairman of the Shiawassee County Democratic Committee; served as county jail physician; on the staff of the Memorial Hospital, Owosso; died suddenly January 24, aged 78, of angina pectoris.

Alexandre d'Artun, Lawrence, Mass.; Université de Lausanne Faculté de Médecine, Switzerland, 1919; died in the Deaconess Hospital, Boston, January 25, aged 50, of bronchopneumonia, pulmonary metastatic sarcoma and osteochondrosarcoma of the right ileum.

John Joseph Egan, Gloucester, Mass.; Harvard Medical School, Boston, 1894; member of the Massachusetts Medical Society; died January 22, aged 73.

Clara S. Eirley, St. Petersburg, Fla.; Woman's Medical College of Baltimore, 1892; member of the Indiana State Medical Association and the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology, Inc.; served on the staff of the Logansport State Hospital, Logansport, Ind.; died January 30, aged 76, of myocardial degeneration.

Joseph Wilbur Ehmer, Crivitz, Wis.; Northwestern University Medical School, Chicago, 1900; died in Pembine recently, aged 77, of hypostatic pneumonia, cardiac failure and myocarditis.

Laszlo Joseph Endrey ✠ Cleveland; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1913; on the staff of the Lutheran Hospital; found dead January 28, aged 55, of a self-inflicted bullet wound.

Edward Purdon Evans ✠ Milwaukee; Rush Medical College, Chicago, 1894; formerly professor of pediatrics at the Marquette University School of Medicine; for eighteen years medical examiner of the Equitable Life Assurance Society of the United States; served overseas during World War I; on the staff of the Misericordia Hospital; died January 31, aged 70, of coronary thrombosis and angina pectoris.

Arthur Ezra Falkenbury ✠ Whitehall, N. Y.; Albany (N. Y.) Medical College, 1896; past president of the Washington County Medical Society; on the staff of the Glens Falls Hospital, Glens Falls; formerly a member of the school board; died January 23, aged 78, of lobar pneumonia.

Joshua Harlan Fell, Canyon City, Ore.; Rush Medical College, Chicago, 1888; died January 16, aged 80, of arteriosclerosis.

Herbert Loring Frost, East Cleveland, Ohio; Homeopathic Hospital College, Cleveland, 1886; fellow of the American College of Surgeons; past president of the staff and

member of the visiting staff, Huron Road Hospital, where he died February 10, aged 83, of pneumonia and arteriosclerotic heart disease.

Jesse Franklin Goff, Lexington, Tenn.; Vanderbilt University School of Medicine, Nashville, 1916; member of the Tennessee State Medical Association; died January 11, aged 59.

Norborne Taliaferro Greer, Rockymount, Va.; University of Maryland School of Medicine, Baltimore, 1892; died January 25, aged 76.

Rufus Lynn Grier, Lumpkin, Ga.; Atlanta Medical College, 1893; died December 11, aged 74.

Max Gutman ✠ New York; University and Bellevue Hospital Medical College, New York, 1908; died in the Jewish Memorial Hospital January 29, aged 62, of heart disease.

George Herbert Hanson, Los Angeles; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; formerly mayor of Paisley, Ore.; died January 17, aged 66, of postoperative shock, due to carcinoma of the bladder.

Roy Nolan Hare ✠ Jasper, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1925; past president of the Walker County Medical Society; member of the board of directors of the First National Bank of Jasper; chief of staff, Peoples Hospital; died in the Jefferson Hospital, Birmingham, January 25, aged 49, of heart disease.

Charles Meigs Harrison, Napoleon, Ohio; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1892; member of the Ohio State Medical Association; on the staff of the S. M. Heller Memorial Hospital; died January 31, aged 76, of angina pectoris.

Grant Summer Hicks, Tacoma, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; member of the Washington State Medical Association; died January 19, aged 78, of cerebral hemorrhage.

Walter Howard Hill, San Francisco; John A. Creighton Medical College, Omaha, 1913; on the staff of St. Luke's Hospital; died January 28, aged 55.

Blanca H. Hillman, Drexel Hill, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1905; at one time on the staff of the Woman's Hospital, Philadelphia; died in Nokomis, Fla., January 30, aged 67, of carcinoma of the pancreas and gallbladder, mitral stenosis and left ventricular failure.

Charles J. Hoban ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; on the staff of St. Agnes Hospital; died in the Doctor's Hospital January 30, aged 83, of pneumonia.

William Joseph Holton ✠ Plant City, Fla.; University of Georgia Medical Department, Augusta, 1911; served in the U. S. Army for three years in the Philippines just after the insurrection; died in the Veterans Administration Facility, Bay Pines, January 7, aged 60.

Edward Max Knecht ✠ Washington, D. C.; Harvard Medical School, Boston, 1937; diplomate of the National Board of Medical Examiners; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on Sept. 26, 1940, later stationed at the Walter Reed General Hospital; dishonorably discharged on Nov. 8, 1941; died February 4, aged 34, of acute congestive heart disease.

James E. McConnell, Somerset, Colo.; Rush Medical College, Chicago, 1896; died in Delta recently, aged 74, of carcinoma of the prostate.

Charles H. Merrill, Detroit; University of Wooster Medical Department, Cleveland, 1905; a captain in the medical corps of the U. S. Army during World War I; served as a member of the tuberculosis division of the city board of health and the research division of Parke Davis & Company; died February 26, aged 64, of coronary thrombosis.

Melvin G. Paden, White Oaks, N. M.; Louisville (Ky.) Medical College, 1886; formerly health officer and druggist; died recently, aged 82, of pneumonia.

Lucy C. Waite Robinson, Denver; the Hahnemann Medical College and Hospital, Chicago, 1883; Harvey Medical College, Chicago, 1895; at one time on the staff of the Mary Thompson Hospital of Chicago for Women and Children; served as a delegate to the International Congress of Surgeons in Lisbon and Moscow; died recently, aged 83, of chronic myocarditis, concussion of brain and shock due to a fall.

O. Lee Schattenburg ✠ Honolulu, Hawaii; University of California Medical School, San Francisco, 1925; served as recording secretary and president of the Honolulu County Medical Society; consultant, maternal and infant welfare bureau of the board of health; on the staffs of Queen's, St. Francis and Kapiolani hospitals; died July 10, 1943, aged 48, of toxic myocarditis secondary to infected psoriasis.

Clayton Myron Spencer, Scottville, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; member of the Michigan State Medical Society; a lieutenant during World War I; formerly mayor of Scottville; served as a member of the board of education; member and past president of the Rotary Club; a director of the Scottville Savings Bank; died in the Paulina Stearns Hospital, Ludington, January 31, aged 65, of coronary thrombosis.

John Peter Toomey, Boston; Harvard Medical School, Boston, 1893; died recently, aged 73.

Henry Mitchell Waldren, Drayton, N. D.; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1898; member and past president of the North Dakota State Medical Association; formerly member and past president of the North Dakota State Board of Medical Examiners; fellow of the American College of Surgeons; medical director and owner of the Drayton Hospital; died in the University Hospital, Minneapolis, February 22, aged 68, of Hodgkin's disease.

Joseph Lonzo Wicks ✠ Evanston, Wyo.; Ohio Medical University, Columbus, 1898; past president of the Wyoming State Medical Society and of the Uinta County Medical Society; member of the House of Delegates of the American Medical Association session in 1905; county health officer; served as physician for the Bear River Coal Company and as member of the city council; a member of the Wyoming legislature in 1933 and 1935; since 1918 president of the Stockgrowers Bank of Evanston; died January 31, aged 73, of hypertensive heart disease.

Timothy Graham Williams, Rosehill, N. C.; George Washington University School of Medicine, Washington, D. C., 1911; served during World War I; died December 27, aged 56.

DIED WHILE IN MILITARY SERVICE

Edward Murray Fitzgerald, Pittsburgh; Georgetown University School of Medicine, Washington, D. C., 1936; member of the Medical Society of the State of Pennsylvania; commissioned a first lieutenant in the medical reserve corps of the U. S. Army June 7, 1936 and later promoted to captain; died at De Ridder, La., February 11, aged 34.

Albert Whitfield Hawkes, Cutchogue, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1935; member of the Medical Society of the State of New York; commissioned a major in the medical corps, Army of the United States, on Feb. 27, 1942 and attached to the 9th General Hospital, Fort Andrews, Mass.; died in the South Pacific area Dec. 17, 1943, aged 37, of typhus.

Raymond Barnard Miles ✠ Brooklyn; Yale University School of Medicine, New Haven, Conn., 1924; fellow of the American College of Surgeons; served as instructor in the department of surgery at the Long Island College of Medicine; at one time assistant to the chief medical examiner of New York; formerly an associate staff surgeon at the Brooklyn Hospital; served during World War I; began extended active duty Nov. 3, 1942 as a major in the medical reserve corps, U. S. Army, attached to the 79th General Hospital, Camp White, Medford, Ore.; died in Ireland February 2, aged 45, of accidental asphyxiation.

Harry Dudley Miller ✠ Shelbyville, Ind.; University of Illinois College of Medicine, Chicago, 1934; commissioned as a first lieutenant on May 5, 1942 in the medical corps, Army of the United States; assigned to the 40th Station Hospital, Camp Barkeley, Texas; later promoted to captain; died in the North African theater February 2, aged 35, of injuries received when a boiler exploded.

James Douglas Noonan, Seattle; McGill University Faculty of Medicine, Montreal, Que., 1943; served as an intern at the Providence Hospital; commissioned a first lieutenant in the medical corps, Army of the United States, Oct. 23, 1943; died in Camp Barkeley, Texas, February 9, aged 25, of meningitis.

Clifford August Schmiesing, Salamanca, N. Y.; St. Louis University School of Medicine, 1929; member of the Medical Society of the State of New York; for many years school physician; commissioned a first lieutenant in the medical reserve corps of the U. S. Army on July 21, 1938 and began extended active duty in April 1941; later promoted to captain; died in Algeria January 21, aged 38, of a skull fracture received in an accident.

Bureau of Investigation

DANGEROUS TO HEALTH

Because of Inadequate Warnings on Labels

[EDITORIAL NOTE.—These abstracts differ from other abstracts of Notices of Judgment issued by the Food and Drug Administration of the Federal Security Agency which have appeared in these pages in that they deal with nostrums which were misbranded because their labels failed to carry adequate warnings against giving them to children or using them in the pathologic conditions in which they might be dangerous to health, or caution against unsafe dosages or methods of duration of administration or application, for the protection of the user. The abstracts that follow are given in the briefest possible form; (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment.]

Greenawalt's Compound Dandelion Liver Disks.—William G. Greenawalt, Norwich, N. Y. Shipped March 26, 1941. Composition: essentially laxative plant drugs, such as podophyllum and aloes, with small amounts of belladonna and nux vomica alkaloids. Misbranded because label failed to give adequate directions for use or sufficient warning against giving to children or using in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe dosage or methods or duration of administration, particularly in that it failed to warn that a laxative should not be taken when nausea, vomiting, abdominal pain or other symptoms of appendicitis are present, or that frequent use of product might result in dependence on laxatives, or that use of a medicine containing strychnine, as this did, might be especially dangerous to children and elderly persons.—[*D. D. N. J., F. D. C. 706; April 1943.*]

Kalis Capsules.—Kalis Products, Ottumwa, Iowa. Shipped Nov. 6 and Dec. 5, 1941. Composition: essentially acetanilid and laxative plant drugs, including podophyllin and cascara sagrada. Misbranded because labeling failed to give adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, since labels did not caution against administering this product when symptoms of appendicitis are present, or to warn against unsafe methods or duration of administration, whereas frequent or continued use of product might be dangerous in causing serious blood diseases, anemia, collapse or dependence on the drug.—[*D. D. N. J., F. D. C. 707; April 1943.*]

Lanoten for Women.—National Medicine Company, Nashville, Tenn. Shipped Jan. 10, 1942. Composition not stated. Misbranded because label did not give adequate directions for use as a laxative, which product was alleged to be, and further failed to bear adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, or caution against unsafe duration of administration. Further misbranded because label was misleading in that it represented and suggested that the product was especially adaptable for use by women, whereas its effect would be the same on both men and women.—[*D. D. N. J., F. D. C. 708; April 1943.*]

Nurito.—Nurito Company, Chicago. Shipped Sept. 27, 1941, and Jan. 23, 1942. Composition: Each powder contained ⅓ Gm. of phenolphthalein. Misbranded because label did not give adequate directions for use or sufficient warnings against administering in those pathologic conditions wherein it might be dangerous to health, or sufficient caution against unsafe duration of administration, since it did not adequately warn the user that the product should not be taken when certain stated symptoms of appendicitis are present, or that frequent or continued use might result in dependence on laxatives.—[*D. D. N. J., F. D. C. 710; April 1943.*]

Pon-Tam-Pon and Glycerant.—Pond Manufacturing Company, Rutland, Vt. Shipped Jan. 2, 1942. Composition: tampons and a tube labeled "Glycerant." Examination of "Medication A" tampon showed that it was essentially a gelatin shell containing a jelly composed of glycerinated gelatin, boric acid, ichthammol, iodine and a bundle of wool fibers. "Medication C" tampon was found to have the same composition except that it also contained silver nitrate, but no ichthammol. The Glycerant was found to be essentially boric acid in a jelly base. Articles misbranded because labels failed to give adequate warnings against use in those pathologic conditions wherein they might be dangerous to health, since labeling did not warn that they should not be used in case of gonorrhea. Further misbranded because of false and misleading label statements: "A tampon should be worn continuously and changed every 24 hours to obtain best results . . . but if profuse discharge is present, tampon should be changed every 12 hours until discharge is relieved . . .", which statements represented that the articles constituted effective treatments for discharge from the vagina and prolapse and backward displacement of the uterus.—[*D. D. N. J., F. D. C. 711; April 1943.*]

Shapley's Medicine for Acid or Sour Stomach.—Shapley Drug Company, Decatur, Ill. Shipped March 17, 1942. Composition: essentially extracts of plant drugs including rhubarb, with alcohol, sugar, potassium carbonate and water. Misbranded because labeling failed to give adequate directions for use, in that it provided for continuous administration of a laxative, which type of product should be taken for only occasional need. Further misbranded because label failed to warn adequately against use in those pathologic conditions wherein it might be dangerous to health, since labels failed to warn that the product should not be taken when abdominal pains, nausea, vomiting or other symptoms of appendicitis were present, or to caution against unsafe methods or duration of administration.—[*D. D. N. J., F. D. C. 712; April 1943.*]

Special Formula Tablets S. C. Purple.—Purity Drug Company, Passaic, N. J. Shipped Oct. 20, 1941. Composition: yohimbé bark, a strychnine compound, a magnesium compound, zinc phosphide, and extracts of plant drugs, such as damiana. Misbranded because labeling instruction, "Dose: To be taken as directed by physician," did not constitute adequate directions for use. Further misbranded because label failed to give adequate warning against administration to children, which use might be dangerous to health, or caution against unsafe dosage or duration of administration, since no caution was urged against frequent or long continued use, which might result in strychnine poisoning.—[*D. D. N. J., F. D. C. 713; April 1943.*]

Spicer's Compound.—Charles R. Spicer Company, Memphis, Tenn. Shipped Oct. 22, 1941, and Jan. 21, 1942. Composition: essentially a solution of epsom salt (about 25 per cent), with relatively small proportions of extracts of plant drugs, including laxatives, and a small amount of an iron salt, sweetened with saccharin and preserved with sodium benzoate. Misbranded because labeling failed to give adequate warnings against use in those pathologic conditions wherein it might be dangerous to health, since the label statement, "Caution—In case of severe abdominal pain, do not take a laxative," did not adequately warn purchasers against using this product when additional symptoms of appendicitis were present, or caution that frequent use of the product might cause a laxative habit; further misbranded because represented as a relief for various conditions which are due to causes other than occasional constipation; also misbranded because of label misstatements as to composition or as to proper terms of drugs present.—[*D. D. N. J., F. D. C. 714; April 1943.*]

Weltone.—Standard Chemical, Inc., Brooklyn, N. Y. Shipped Jan. 10, 1942. Composition: a solution of epsom salt (28 per cent), with inconsequential amounts of other salts, flavored with cassia and clove oils and sweetened with saccharin. Misbranded because label directions for use were inadequate and might result in dependence on laxatives. Further misbranded because the "tone" part of name represented that product would increase appetite, and statements in accompanying circular represented that mixture would increase appetite, prevent or cure headaches or run-down feeling, establish regularity in elimination, correct sluggish digestion or sour stomach, prevent weakening feeling due to constipation, eliminate any danger to general health, assist in digestive processes, and produce some other beneficial effects. Also misbranded because of label claim that the product complied with the federal Food, Drug and Cosmetic Act.—[*D. D. N. J., F. D. C. 716; April 1943.*]

MISBRANDED PRODUCTS

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the Federal Security Agency

[EDITORIAL NOTE.—These Notices of Judgment are issued under the Food, Drug and Cosmetic Act and in cases in which they refer to drugs and devices they are designated D. D. N. J. and foods, F. N. J. The abstracts that follow are given in the briefest possible form: (1) the name of the product; (2) the name of the manufacturer, shipper or consigner; (3) the date of shipment; (4) the composition; (5) the type of nostrum; (6) the reason for the charge of misbranding, and (7) the date of issuance of the Notice of Judgment—which is considerably later than the date of the seizure of the product and somewhat later than the conclusion of the case by the Food and Drug Administration.]

Gold Medal Compound Pills and Savatan.—S. Pfeiffer Manufacturing Company, St. Louis. Shipped Feb. 16, 1942. Composition: the pills consisted essentially of iron sulfate and small amounts of volatile oils, including spearmint. Savatan consisted of capsules each containing about 5 minims of apiol. Both products misbranded because of misleading label representations that they would relieve minor discomforts in menstruation.—[*D. D. N. J., F. D. C. 736; April 1943.*]

Green's Reliable Restorer.—A. J. Green, Clarksburg, W. Va. Shipped Feb. 16, 1942. Composition: essentially lead acetate and sulfate, zinc acetate, sulfur, alcohol, glycerin, oil of bay and water. Misbranded because of false and misleading representations on label that product would restore gray or faded hair to its natural color, free the scalp from dandruff and all contagious eruptions, stop hair from falling and promote and restore its growth.—[*D. D. N. J., F. D. C. 737; April 1943.*]

Herb Doctor Compound.—Strong, Cobb and Company, Cleveland. Shipped Sept. 25, 1941. Composition not stated. Misbranded because labeling failed to bear adequate directions for taking, since those given provided for its use under conditions which might have rendered it injurious to the user by creating a dependence on laxatives to move the bowels.—[*D. D. N. J., F. D. C. 666; February 1943.*]

Ketalko.—Block Drug Company, Jersey City, N. J. Shipped Dec. 22, 1941, and May 11 and June 2, 1942. Composition: essentially sulfur, pilocarpine, resorcinol and a camphoraceous oil, in an ointment base. Misbranded because label falsely represented that the product would discourage excessive loss of, and strengthen existing growth of, hair and help promote new growth, and that it was an efficacious treatment for dandruff, thin, brittle or falling hair and baldness. Further misbranded because made from two or more ingredients, whereas label did not give the common or usual name of each.—[*D. D. N. J., F. D. C. 740; April 1943.*]

Na-Stim.—Na-Stim Laboratories, Inc., Modesto, Calif. Shipped Nov. 24, 1941. Composition: essentially water, a gum, and fatty material. Misbranded because label claimed also the presence of menthol, Venice turpentine, oil of pine and iodine, whereas the government chemists' analysis did not detect the presence of the first three of these, and found merely a trace of combined iodine. Further misbranded because label falsely represented that product constituted relief from, and adequate treatment for, hay fever, sinusitis, head colds and other nasal disorders.—[*D. D. N. J., F. D. C. 739; April 1943.*]

O'Dara.—O'Dara Products Company, St. Louis. Shipped April 28, 1941. Composition (by percentages): alcohol, 46; glycerin, 17; methyl salicylate, 7; potassium iodide, 5; zinc chloride, 3, and phenol, 1, with unreported amounts of water, saccharin and myrrh. Misbranded because label falsely represented that it was an adequate treatment for pyorrhea, trench mouth, canker sores, stomatitis or spongy gums, that it would coagulate, detach and clear away objectionable matter, leave the tissues clean and stimulate healing processes; that it would kill disease-producing organisms in the tissues, act as an adequate treatment for sore throat, form a protective film over wounds by coagulating the blood, and accomplish some other things.—[*D. D. N. J., F. D. C. 738; April 1943.*]

Omega Oil.—Block Drug Company, Jersey City, N. J. Shipped Dec. 22, 1941, and May 11 and June 2, 1942. Composition: essentially chloroform, methyl salicylate, mineral oil and a small amount of alkaloidal material such as hyoscyamus. Misbranded because label falsely represented that the product was different from ordinary liniments and was "far more than just liniment"; that it was a powerful and reliable answer to dozens of everyday ills; that at point of application it would soothe and ease the local nerves, stimulate the circulation, break up congestion, relieve rheumatic pains due to exposure, dampness and cold, alleviate athlete's foot and toe itch, and do some other things.—[*D. D. N. J., F. D. C. 740; April 1943.*]

Optic Drop.—Romero Drug Company, El Paso, Texas. Shipped Oct. 4, 1940. Composition: a watery solution of zinc sulfate, chlorobutanol, a berberine salt and boric acid or other borate. Misbranded because label falsely represented it to be beneficial for irritated eyes and failed to give the common or usual name of each active ingredient or a declaration of the quantity of the contents.—[*D. D. N. J., F. D. C. 741; April 1943.*]

Papaya Syrup.—Tropical Fruit Products, St. Louis. Shipped Feb. 25, 1941. Composition: an opaque, yellow, syrupy liquid containing essentially sugars, fruit acids, and orange and lemon oils, with papaya flavor. No active papain or other proteolytic enzymes found. Misbranded because label falsely represented that product would supply energy food which could be easily absorbed; that it would promote health and build energy, reduce absorption of poisonous toxins in stomach distress, be an alkalizer and body builder, prevent kidney, liver and stomach diseases and keep the skin clear; that it was an appropriate treatment for anemia, gastritis, indigestion, constipation, arthritis, rheumatism, ulcers, colitis, sinusitis, influenza, colds, dysentery and obesity, and would increase the stature of children.—[*D. D. N. J., F. D. C. 636; February 1943.*] Also misbranded under the provisions of the law applicable to foods, as reported in *F. N. J. 3647.*

Utona.—National Utona Company, Detroit. Shipped Oct. 18 and Dec. 2, 1941, and Jan. 12, 1942. Composition: essentially an extract of a saponin-bearing plant such as yucca, preserved with salicylic acid and sodium benzoate, colored with caramel and flavored. Misbranded because of false and misleading label representations that it would be efficacious as a relief for high blood pressure; would control the pressure and relieve the distressing symptoms; would lower high blood pressure of patients even in advanced years and render the body less toxic; would lessen the urge for frequent urination at night, impart a profound sense of well-being, and usually bring about improvement in symptoms such as pains in the back and neck, dizziness, headaches and tingling sensation; would help one sleep better and feel better and bring about a better relationship between the systolic and diastolic pressure.—[*D. D. N. J., F. D. C. 742; April 1943.*]

Via-Min.—Universal Products Company, Cleveland. Shipped March 7 and 10, 1942. Composition: a liquid containing ferric sulfate (about 1,196 grains per gallon) and smaller amounts of the sulfates of aluminum, calcium and magnesium, with sodium phosphate. Misbranded because label carried false declaration of composition, and further represented in a lengthy list of ailments that product was virtually a cure-all. Among the disorders mentioned were such serious conditions as Bright's disease, diabetes, gallstones, cataract, anemia, arthritis, asthma, goiter and tuberculosis.—[*D. D. N. J., F. D. C. 743; April 1943.*]

Correspondence

MARIHUANA INTOXICATION

To the Editor:—As a result of the suppression, due to the war, of postal relations between the United States and Tunisia, I have only just learned of the work of Drs. Samuel Allentuck and K. M. Bowman entitled "The Psychiatric Aspects of Marihuana Intoxication" (*Am. J. Psychiat.* **99**:248 [Sept.] 1942). I take the liberty of bringing to your attention the observations suggested to me by this communication:

(*a*) The authors say that their experiments were made by administering the drug orally: now in the countries where toxicomania through hemp is rife it is chiefly by smoking it that addicts consume the drug. The authors recognize, moreover, that a drug takes effect more rapidly (I may add, with greater intensity) when it is ingested.

(*b*) The symptoms of cannabic intoxication reported by the authors are well known and have been described many times in almost the same terms by those authors who have discussed the question (see the work of R. P. Walton "Marihuana" and the document of the League of Nations: O. C. Cannabis 3). A happy addition, Allentuck and Bowman have been able to give a few results of ophthalmoscopic examinations, data concerning blood pressure and the results of the application of various tests.

(*c*) Allentuck and Bowman declare that their clinical and laboratory studies, made on subjects accustomed and unaccustomed to marihuana, reveal no significant somatic or mental change. It is regrettable that it was not possible for them to examine a few of those inveterate hemp smokers that one meets in India, the Near East and North Africa, cachectic, stupefied, besotted, incapable of any sustained work: their opinion would certainly not be the one which they maintain.

(*d*) The symptoms which Allentuck and Bowman describe correspond very exactly to what one might call acute temporary intoxication by cannabis and not to chronic intoxication.

I have pointed out, in my reports to the League of Nations, that many hemp smokers in North Africa confine themselves reasonably to relatively slight doses and frequency of absorption: they smoke, daily, 6 or 8 pipes of hemp, as we smoke 10 to 20 tobacco cigarets. If they confine themselves to this, there is no danger. As for those who, less wise, have not the will to resist the attraction of the narcotic, they are headed for chronic intoxication, which leads them little by little to the most complete physical and moral decay.

To tell the truth, these unfortunates only rarely reach dementia. They are not encountered in the insane asylums: it is in the class of thieves (la "pègre"), made up of professional beggars, prowlers and robbers, that they fall. It would be superfluous to amplify this subject: it is set forth at length in Document O. C. Cannabis 3 of the League of Nations (pp. 51 to 66). Nevertheless it must be noted that the most serious accidents are observed in individuals consuming hashish (charas, chira); that is to say, the crude resin, and not in smokers of the plant itself, in its natural state. In fact, whereas the plant is shown to contain on an average from 5 to 8 Gm. of crude resin per hundred grams, hashish contains from 35 to 47 per cent of it. Until recently hashish (charas) was unknown in America: now, the last report of the United States government (1942) on the traffic in opium and other dangerous drugs mentions (p. 30) two seizures of charas. The notice is serious and big with disturbing consequences. In fact, if it becomes possible for them to consume charas, marihuana addicts will quickly suffer from accidents much more severe than those confirmed by Allentuck and Bowman.

The 77 subjects who underwent the experiments of Drs. Allentuck and Bowman (and this takes away a great deal of their value from the conclusions of these authors) were hos-

pital patients, even, it appears, prisoners. They were therefore obliged to be content with the quantities of drug administered to them. At liberty, some of them would have given free rein to their inclination and would not have stopped at the weak dose producing "the pleasure principle." It is because they can procure the drug at will, because they can consume as much of it as they wish and as often as they desire it, in the Oriental countries (where traffic in the drug is not prohibited or regulated), that there is such a large number of serious chronic cases of intoxication, the addicts being incapable of working, wretched ragamuffins who are a danger and a burden to society. These consequences alone would justify the prohibition of and a declaration of war on marihuana.

(*e*) There is not, say Allentuck and Bowman, any special characteristic psychosis due to marihuana. That may still be true, at present, in the United States, for a population in which the old hemp addict does not yet exist. That is why the remark of Dr. Lawrence Kolb (in the course of the discussion of the communication of Allentuck and Bowman) must be kept in mind: "the experiments ought to be made in a country like Mexico, where the use of marihuana is widespread."

The serious chronic hemp addict will perhaps never be produced in the United States, thanks, first, to the wise measures of prohibition and supervision taken and also because (if account is taken of what is found to be true in the Orient and in North Africa) it cannot be denied that serious chronic hemp intoxication makes hardly any victims except among the native population. The European, if, out of curiosity, he occasionally consumes hemp, does not make a practice of this intoxication: the form of drunkenness produced by it does not suit his temperament, his mentality. On the other hand, the poison appears perfectly adapted to the mentality of the Orientals, who have used it for almost eight centuries; but it is incontestable that it establishes in them a characteristic psychosis, which never escapes the doctor accustomed to seeing this sort of patients.

(*f*) Allentuck and Bowman say that cannabic intoxication is extremely variable in its manifestations. It is just there that one of its greatest dangers exists, for one does not know, and cannot foresee, how it will show itself. Certain addicts are driven, under the influence of hemp, to irresistible and dangerous impulses, whereas in others one finds only mental instability and reactions without danger for others. The attack varies, in short, with the culture, the sensitiveness and the intelligence of the subject: an apathetic person will have a calm and mild delirium; an imaginative one will have brilliant and varied hallucinations; a brute will have savage reactions, accesses of mad rage: Dr. Blondel once wrote "Every hashish addict has the dream which he deserves." That is, moreover, why psychoanalysts have proposed the use of cannabis to reveal the subconscious. This is quite all right when it is a question of supervised clinical experiments, but in everyday life is it not to be feared that in many cases tendencies and propensities will emerge from the subconscious of a goodly number of individuals which it would have been much better to leave buried forever?

(*g*) It has likewise long been noted that hemp was not an aphrodisiac; like certain other sensorial drugs, it produces, in certain consumers, sexual excitations psychic in character but without any physical effect. It is, moreover, notorious that hashish addicts no longer experience any sexual desire: women no longer interest them; they frequently fall, for a time, into sexual perversion, then, sobered, they are content to live "with their pipe and their pot."

(*h*) Allentuck and Bowman maintain that the relations between marihuana and crime are unfounded. This opinion, based on 77 tests applied to persons not living at liberty, appears bold. This has not escaped Dr. Lawrence Kolb, who expresses his reservations: "One may say of such a drug that, if it were abused as alcohol is abused, it might be an important cause of crimes and other misdemeanors."

Now, the statistics of the Narcotics Bureau in Washington are already eloquent on this subject; the annual reports of the Egyptian government to the League of Nations are no less so, as well as the various documents published in the course of the inquiries of the League of Nations.

"Hachichins" [hashish addicts] do not all become assassins (a reference to the medieval legend of the Old Man of the Mountain and his band of Assassins; the word "assassin" is derived from "hashis"). But their laziness, their amorality, indubitably lead them to commit criminal acts if only in order to procure the money necessary for the regular purchase of the drug. This road leads far and sometimes ends in crime.

(*j*) It is correct—and well known—that accidents from privation have not, with cannabis, the seriousness which they attain for users of manufactured drugs, even opium. Nevertheless, quite serious disorders are observed in those addicted to the drug over a long period when their poison is removed. Attacks of physical prostration and intellectual apathy, especially, are noted: the patient remains in a corner, prostrated, refusing to move, neglecting to eat.

(*k*) The use of marihuana to combat disorders due to the abuse of narcotics and to chronic alcoholism appears paradoxical. With individuals able to avail themselves freely, outside of all medical control, of a substitute drug analogous to the one of which one desires to have him [sic] break the habit, one will succeed only in replacing one intoxication by another.

I am willing to admit that certain persons afflicted with toxicomania who took a cure for intoxication by means of marihuana under the supervision of Drs. Allentuck and Bowman found accidents from privation improved by this substitution, that they were in better form as regards morale and bodily energy and were desirous of resuming their occupations more quickly. But I still maintain that at least 95 per cent of the persons suffering from toxicomania who have been forced to undergo a cure for intoxication have only one desire, on leaving the clinic; to wit, to procure their favorite drug quickly and to become addicted to it once more. There is therefore no reason to accustom them, in the course of treatment, to a substitute drug: that would be furnishing them two means of satisfying their vice, when they are no longer under the supervision of the hospital personnel.

I therefore share to the full the opinion of Dr. Lawrence Kolb: "By proposing the use of marihuana in the treatment of toxicomanias and chronic alcoholism, Drs. Allentuck and Bowman are entering dangerous territory and the result can be only the substitution of one toxicomania for another."

In conclusion, however interesting the results of the researches of Drs. Allentuck and Bowman may be, from certain points of view, it is my opinion that they have been made known to the public prematurely. In exclusively medical circles, such communications present no danger; on the contrary, they provoke discussions and new investigations which may throw light on the disputed points. But it is to be feared that the general public will retain especially what is not irrefutably proved by the work of Drs. Allentuck and Bowman; to wit, that marihuana is not as dangerous as it is said to be, that it induces pleasant sensations without the risk of baleful consequences and that it may constitute a valuable method of treatment in certain afflictions.

The use of marihuana must be prohibited on the same grounds as that of opium and the manufactured narcotics, and the social interest of the civilized countries demands that the strictest prohibition measures be taken and enforced.

J. BOUQUET, M.D.,
Hospital Sadiki, Tunis.
Expert on the Narcotics Commission
of the League of Nations.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, March 25, page 947.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, Oct. 24-26. Sec., Dr. B. F. Austin, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, September 5. Sec., Dr. W. M. Whitehead, Box 561, Juneau.

ARIZONA:* Phoenix, April 4-5. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS:* *Eclectic.* Little Rock, June 8. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: San Francisco, June 27-29 Sec., Dr. Frederick N. Scatena, 1020 N St., Sacramento.

COLORADO:* Denver, April 4-7. Sec., Dr. J. B. Davis, 831 Republic Bldg., Denver.

DELAWARE: Dover, Oct. 10-12. Sec., Medical Council of Delaware, Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA:* Jacksonville, June 26-27. Sec., Dr. W. M. Rowlett, Box 786, Tampa.

ILLINOIS: Chicago, April 4-6. Supt. of Registration, Department of Registration and Education, Mr. Philip Harman, Springfield.

INDIANA: Indianapolis, May 2-4. Sec., Board of Medical Registration and Examination, Dr. W. C. Moore, 301 State House, Indianapolis.

KENTUCKY: Louisville, Sept. 11-12. Sec., State Board of Health, Dr. Philip E. Blackerby, 620 S. Third St., Louisville.

MARYLAND: *Medical.* Baltimore, June 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Homeopathic.* Baltimore, June 20-21. Sec., Dr. J. A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA:* Minneapolis, April 18-20. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSOURI: St. Louis, August. Sec., State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, April 3-5. Sec., Dr. O. G. Klein, First National Bank Bldg., Helena.

NEVADA: Carson City, May 1. Sec., Dr. G. H. Ross, 215 N. Carson St., Carson City.

NEW MEXICO:* Santa Fe, April 10-11. Sec., Dr. LeGrand Ward, 141 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York City and Syracuse, June 26-29. Sec., Dr. R. R. Hannon, Education Bldg., Albany.

NORTH CAROLINA: Raleigh, September. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: *Endorsement.* Columbus, April 4. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON:* *Endorsement.* Portland, April 22. Exec. Sec., Miss L. M. Conlee, 608 Failing Bldg., Portland.

RHODE ISLAND:* Providence, April 6-7. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 26-28. Sec., Dr. N. B. Heyward, 1329 Blandena St., Columbia.

WEST VIRGINIA: Charleston, May 1-3. Commissioner, Public Health Council, Dr. John E. Offner, State Capitol, Charleston.

WISCONSIN:* Milwaukee, June 27-29. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls.

WYOMING: Cheyenne, June 5-6. Sec., Dr. M. C. Keith, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

DISTRICT OF COLUMBIA: Washington, April 17-18. Sec., Commission on Licensure, Dr. G. C. Ruhland, 6150 E. Municipal Bldg., Washington.

FLORIDA: Gainesville, June 8. Sec., Dr. J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, April 11. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MICHIGAN: Ann Arbor and Detroit, May 12-13. Sec., Miss Eloise LeBeau, 101 N. Walnut St., Lansing.

MINNESOTA: Minneapolis, April 4-5. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Omaha, May 2-3. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, 1009 State Capitol Bldg., Lincoln.

RHODE ISLAND: Providence, May 17. Sec., Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Vermillion, June 4-5. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, April 1. Sec., Prof. R. N. Bauer, 152 W. Wisconsin Ave., Milwaukee.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Excessive X-Ray Dosage in Treatment of Barber's Itch. — Simon developed so-called "barber's itch" on his face in February 1941. His face became swollen, many pustules were exuding pus, the skin became cracked and bleeding, and there were some scabs. About May 17 he went to a clinic conducted by the Chicago Medical School, where he was examined and referred for treatment to the defendant, Kaplan, an associate professor of radiology at that school, who, so he testified, for over twenty years had limited his practice to roentgenology. May 29 the patient was subjected to x-ray therapy, the exact nature and extent of which is in dispute. The physician stated that each side of the patient's face was exposed to an x-ray machine for three and one-half minutes and that each side of the face received 217 r units. On the other hand, the patient stated that each side of his face was exposed ten minutes and a card, a part of the physician's office record relating to the patient, read "three and a half minutes to each side of the face, 500 r." The physician stated, however, on cross examination, in the words of the court, "with some uncertainty and hesitation that the 500 r which appeared on the card was the number of units he intended to give plaintiff and that he had not given him more than 217 r's during the treatment, on each side of the face." In any event, the patient returned to the physician in about two weeks, at which time his face was red and the physician gave him some salve, instructing him to return in a week to ten days, when he would give him another x-ray treatment. The patient, however, never returned but instead, on June 19, consulted Dr. Caro, a dermatologist. Just what the trouble was the reported case does not make satisfactorily clear. Apparently, however, the hair on the patient's face fell out permanently, the skin atrophied "with discoloration," there was "thinning of the skin, with erosions," and there was an enlargement of the veins. Alleging that that condition was due to negligence on the part of the physician in applying the x-ray treatment, the patient instituted an action for malpractice.

At the trial Dr. Caro, the dermatologist consulted by the patient, testified that he diagnosed the patient's condition when he was consulted that day as "an acute dermatitis, produced, probably, by radiation. That is x-ray." He stated that he treated the patient a number of times later, that the patient's condition improved in September or October 1941, that at the time of the trial the patient "shows the effects that we usually see in chronic x-ray burn" and that in his opinion, if proper dosages of x-ray had been applied, the present condition of the patient would not have developed. Dr. Uhlmann, who specialized in "radiotherapy, x-ray, diagnostic and therapeutic," was also called as a witness at the trial by the patient and he testified "that he saw plaintiff a few days before the trial and observed in his face several signs of disease which he proceeded to mention; that the condition he found on the upper part of the face 'could not be due to barber's itch or the after effects of barber's itch.'" In answer to a hypothetical question he testified that the logical conclusion is that the patient received more x-ray to the upper part than he received in the lower part of his cheeks and that in his opinion the treatment mentioned in the hypothetical question propounded to him "would not be usual and customary for a specialist to apply enough x-ray to bring about a condition of atrophy of the skin, thinning of the skin, with erosions." The defendant physician himself testified that the treatment he gave the patient was "the same kind of treatment ordinarily and customarily given by me to patients suffering from the barber's itch. In fact, he received a less number of r units than I have given to quite a number of others." As noted before, Kaplan testified that he gave the patient 217 r units on each side of the face, making a total of 434 r units, but his record card of the case bore a notation of 500 r, which he stated on cross examination was what he intended ultimately to give to the patient. The defendant called as a witness Dr. James T. Case, "practicing specialty radiology," who, in answering a hypo-

thetical question, testified that a total dosage of 500 r units to be given in two different treatments was quite within the ordinary and usual proper practice and that if 500 r units were given to each cheek in one treatment, "That would be somewhere near the upper limit of the proper dosage, it wouldn't be far from it." The defendant also called as a witness Dr. I. S. Trostler, also a radiologist, who in answer to a hypothetical question said that if 217 units were given in the treatment of barber's itch he would consider that according to the usual practice of physicians of skill in using x-ray in Chicago and that if the patient was given 500 r units on each cheek in a treatment he would think this was the proper practice. There was a judgment for $4,500 in favor of the patient and the physician appealed to the appellate court of Illinois, first district, first division.

Apparently, preliminary to an argument on the specific respects in which the defendant contended that the trial court had erred, the defendant argued that before a recovery can be had in a malpractice case it must be shown by affirmative evidence that the physician was unskilful and negligent, that his want of skill caused plaintiff's injury and, further, that the liability of a physician for injuries caused by the misuse of an x-ray machine rests on the same principle of law as on any other branch of medicine or surgery. Both of these propositions, said the appellate court, are correct statements of the law. Specifically, the defendant contended (1) that the trial court erred in permitting medical expert witnesses called by the patient to testify directly that the x-ray treatment caused the plaintiff's condition rather than that the treatment might or could have caused the condition and (2) that this action on the part of the trial court was contrary to the rule of law in force in Illinois. It might to some slight extent appear, answered the court, that the patient's expert witnesses testified directly that the x-ray treatment given caused the patient's condition, but on examination of their testimony we think it clear that they were but giving their opinion that the treatment might or could have caused the patient's condition and the jury was not misled.

It was next contended that the diagnosis of the patient's expert witnesses that the patient's condition was due to x-ray exposure is not supported by the facts. The court, however, was unable to say that the jury was not warranted in finding that the treatment given had been negligent. The patient called two physicians who gave testimony tending to show that the defendant had been negligent in treating the patient. On the other side, the physician and two other medical expert witnesses gave testimony to the contrary. In these circumstances we are not warranted in disturbing the verdict of the jury.

The physician next contended that the court erred in the giving of two instructions, Nos. 15 and 16. Instruction No. 15 told the jury that if under a preponderance of the evidence and instructions of the court the jury found the issues for the patient and that the patient had sustained damages by reason of physical pain and suffering undergone by him as a natural, direct and proximate result of the negligence of the defendant, as charged and alleged by the plaintiff, then there should be a finding for the patient. The physician contended that insofar as this instruction in effect told the jury that if they found from a preponderance of the evidence that the plaintiff suffered damages as a result of the defendant's negligence, it in effect assumed that the defendant was negligent. We think this objection, answered the court, is hypercritical and while it would have been better to have told the jury that if they found the patient suffered damages as a proximate result of the defendant's negligence, if any, yet it did not direct a verdict, and we think the jury were not misled because they were told in another instruction that if they believed from the evidence that the defendant used ordinary care and skill in his treatment and exercised his best judgment then it was their duty to find the defendant not guilty. Moreover, the instruction told the jury that they must find the patient was damaged as a result of the physician's negligence "as charged and alleged" by the plaintiff in his complaint. The complaint made to instruction No. 16 was that it instructed the jury that in fixing the plaintiff's damages it might take into consideration the plaintiff's marred personal appearance. But, said the court, in *Fitzgerald* v. *Davis*, 237 Ill. App. 488, we held that the plaintiff's marred personal appearance was a proper element for the jury to consider in fixing the damages. We there said:

> The law only prohibited the recovery of damages in such a case for mental suffering which results from embarrassment or chagrin and which suffering has no relation to physical pain. . . . She might recover for disfigurement which resulted from the accident.

Of course, continued the court, every one knows that the disfigurement of one's face which is the result of a defendant's negligence often may cause damages, for example, plaintiff may be unable to secure employment on account of such disfigurement.

The judgment of the trial court in favor of the plaintiff was accordingly affirmed.—*Simon* v. *Kaplan*, 52 N. E. (2d) 832 (Ill., 1944).

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Montgomery, April 18-20. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
American Association for Thoracic Surgery, Chicago, May 5-6. Dr. Richard H. Meade Jr., Kennedy General Hospital, Memphis, 15, Tenn., Secretary.
American Association of Industrial Physicians and Surgeons, St. Louis, May 8-11. Dr. Edward C. Holmblad, 28 East Jackson Blvd., Chicago, Managing Director.
American Association of Plastic Surgeons, Philadelphia, May 25-27. Dr. Frederick A. Figi, 102 Second Ave., S.W., Rochester, Minn., Secretary.
American Association on Mental Deficiency, Philadelphia, May 11-15. Dr. Neil A. Dayton, Mansfield Training School, Mansfield Depot, Connecticut, Secretary.
American Neurological Association, New York, May 19-20. Dr. Henry Alsop Riley, 117 E. 72d St., New York 21, Secretary.
American Psychiatric Association, Philadelphia, May 15-18. Dr. Winfred Overholser, St. Elizabeth's Hospital, Washington, D. C., Secretary.
American Psychoanalytic Association, Philadelphia, May 13-15. Dr. Robert P. Knight, 3617 W. Sixth Ave., Topeka, Kansas, Secretary.
American Society for Clinical Investigation, Atlantic City, May 8. Dr. Wesley W. Spink, University Hospitals, Minneapolis, Secretary.
Arizona State Medical Association, Phoenix, April 14-15. Dr. Frank J. Milloy, 112 N. Central Ave., Phoenix, Secretary.
Arkansas Medical Society, Little Rock, April 17-18. Dr. W. R. Brookscher, 602 Garrison Avenue, Fort Smith, Secretary.
Association of American Physicians, Atlantic City, May 9. Dr. Joseph T. Wearn, Lakeside Hospital, Cleveland, Secretary.
California Medical Association, Los Angeles, May 7-8. Dr. George H. Kress, 450 Sutter Street, San Francisco 8, Secretary.
Connecticut State Medical Society, Bridgeport, May 2-4. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
Florida Medical Association, St. Petersburg, April 13-14. Dr. Shaler Richardson, 111 West Adams St., Jacksonville, Secretary.
Georgia, Medical Association of, Savannah, May 9-12. Dr. Edgar D. Shanks, 478 Peachtree St. N.E., Atlanta, Secretary.
Illinois State Medical Society, Chicago, May 16-18. Dr. Harold M. Camp, 224 S. Main St., Monmouth, Secretary.
Iowa State Medical Society, Des Moines, April 20-21. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
Kansas Medical Society, Topeka, May 10-11. Dr. F. R. Croson, 112 West Sixth Street, Topeka, Secretary.
Louisiana State Medical Society, New Orleans, April 24-26. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans, 13, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, April 25-26. Dr. W. Houston Toulson, 1211 Cathedral St., Baltimore, Secretary.
Massachusetts Medical Society, Boston, May 23-24. Dr. Michael A. Tighe, 8 Fenway, Boston 15, Secretary.
Minnesota State Medical Association, Rochester, April 13-15. Dr. B. B. Souster, 493 Lowry Medical Arts Bldg., St. Paul, Secretary.
Mississippi State Medical Association, Jackson, May 9-10. Dr. T. M. Dye, Box 295, Clarksdale, Secretary.
Missouri State Medical Association, Kansas City, April 23-25. Dr. Ralph L. Thompson, 634 N. Grand Blvd., St. Louis, Secretary.
National Tuberculosis Association, Chicago, May 10-12. Dr. Charles J. Hatfield. 1790 Broadway, New York, Secretary.
Nebraska State Medical Association, Omaha, May 1-4. Dr. R. B. Adams, 416 Federal Securities Bldg., Lincoln, Secretary.
New Hampshire Medical Society, Manchester, May 16. Dr. C. R. Metcalf, 5 S. State St., Concord, Secretary.
New Jersey, Medical Society of, Atlantic City, April 25-27. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
New York, Medical Society of the State of, New York, May 8-11. Dr. Peter Irving, 292 Madison Ave., New York 17, Secretary.
North Carolina, Medical Society of the State of, Pinehurst, May 1-3. Dr. R. D. McMillan, P. O. Box 232, Red Springs, Secretary.
North Dakota State Medical Association, Fargo, May 7-9. Dr. L. W. Larson. 221 5th Street, Bismarck, Secretary.
Northern Tri-State Medical Association, Toledo, Ohio, April 11. Dr. Oscar P. Klotz, 127 W. Hardin St., Findlay, Ohio, Secretary.
Ohio State Medical Association, Columbus, May 2-4. Mr. Charles S. Nelson, 79 E. State St., Columbus, Executive Secretary.
Oklahoma State Medical Association, Tulsa, April 24-26. Dr. L. J. Moorman, 1200 N. Walker St., Oklahoma City, Secretary.
Rhode Island Medical Society, Providence, May 24-25. Dr. William P. Buffum, 122 Waterman St., Providence 3, Secretary.
Society of American Bacteriologists, New York, May 3-5. Dr. W. C. Frazier, 310 Agricultural Hall, University of Wisconsin, Madison, Wis., Secretary.
South Carolina Medical Association, Columbia, April 11-12. Dr. Julian P. Price, 105 W. Cheves St., Florence, Secretary.
South Dakota State Medical Association, Huron, May 21-23. Dr. Roland G. Mayer, 22½ S. Main St., Aberdeen, Secretary.
Tennessee State Medical Association, Nashville, April 11-13. Dr. H. H. Shoulders, 706 Church St., Nashville, Secretary.
Texas, State Medical Association of, Dallas, May 10-11. Dr. Holman Taylor, 1404 W. El Paso Street, Fort Worth, Secretary.
West Virginia Medical Association, Wheeling, May 15-16. Mr. Charles Lively, P. O. Box 1031, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1934 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Fort Wayne, Ind.

11:1-30 (Jan.) 1944

Review of Hypoglycemia, Its Physiology and Pathology, Symptomatology and Treatment. H. E. Himwich.—p. 1.
*Salmonellosis Caused by the Ingestion of Ducks' Eggs. I. Snapper. —p. 8.
Treatment of Chronic Ulcerative Colitis. C. J. Drueck.—p. 10.
Influence of Diet on Sulfonamide Action. Esther M. Greisheimer, Roberta Hafkesbring and Grace E. Wertenberger.—p. 13.

Salmonellosis Caused by Ingestion of Ducks' Eggs.—Snapper directs attention to the fact that outbreaks of paratyphoid fever C and allied types of salmonellosis may occur if raw or insufficiently cooked ducks' eggs are used in the preparation of ice cream, sauces, puddings, pies or mincemeat, foods that may be put away for hours before they are consumed. Salmonella organisms may multiply rapidly and infection of human beings may result if the foods are eaten. In the United States ducks' eggs are rarely used for human consumption, and salmonellosis of this source is therefore rare. In the Orient, particularly in China, ducks' eggs are widely used and this may be a factor in the frequent occurrence of salmonellosis in that country. In the Netherland East Indies investigations have been carried out on ducks' eggs, and Salmonella typhi murium has been detected in 8 of a total of 300 ducks' eggs.

American Journal of Physiology, Baltimore

140:461-608 (Jan.) 1944. **Partial Index**

Effect of Repeated Determinations on Basal Metabolism of Children. R. C. Lewis, Anna Marie Duval and A. Iliff.—p. 461.
Effect of Damage to Tracheal Mucosa on Drainage of Respiratory Tract Fluid. E. M. Boyd, W. F. Perry and Mary E. T. Stevens.—p. 467.
Carbohydrate Regulation Under Severe Anoxic Conditions. L. Van Middlesworth, R. F. Kline and S. W. Britton.—p. 474.
Effect of Sulfonamides on Blood Oxygen and Carbon Dioxide Capacity, Arterial Saturation and Blood Pigments. J. F. Hall Jr.—p. 483.
*Nervous Factor in Shock Induced by Muscle Trauma in Normal Dogs. W. J. Eversole, W. Kleinberg, R. R. Overman, J. W. Remington and W. W. Swingle.—p. 490.
Changes in Renin-Angiotonin System in Hemorrhagic Shock. D. A. Collins and Angie S. Hamilton, with technical assistance of Margaret Casey Collins and A. Sokalchuk.—p. 499.
Further Study of Boron in Nutrition of Rat. J. D. Teresi, E. Hove, C. A. Elvehjem and E. B. Hart.—p. 513.
Comparison of Renal Reabsorptive Processes for Several Amino Acids. R. F. Pitts.—p. 535.
Relation Between Uric Acid Excretion and Hippuric Acid Synthesis in Man. S. T. Michael, J. M. Looney and Embrie J. Borkovic.—p. 548.
Testing of Color Vision in Relation to Vitamin A Administration. W. F. Hamilton, A. P. Briggs and R. E. Butler.—p. 578.
Relation of Heart Rate to Slow Waves in Electroencephalogram During Overventilation. C. W. Darrow and J. H. Pathman.—p. 583.
Effect of Crystalloidal and Protein-Containing Solutions on Body Fluids and Circulating Plasma Proteins. C. T. Ashworth, Z. W. Hutcheson, W. T. Payne and A. W. Jester.—p. 589.
Radioactive Phosphate as an Indicator of Relationship Between Phosphate Changes of Blood, Muscle and Liver, Following Administration of Insulin. N. O. Kaplan and D. M. Greenberg.—p. 598.
Effect of Thiamine Deficiency and of Reduced Food Intake on Resistance to Low Oxygen Tension in Cat. D. C. Smith, R. H. Oster and J. E. P. Toman.—p. 603.

Nervous Factor in Shock.—Eversole and his collaborators found that traumatization of the muscles of both hind legs by 800 to 1,600 blows with a light rawhide mallet, in which the skin was not ruptured or bones fractured, produced fatal shock in 14 of 15 dogs. The survival periods ranged from two to eight hours, with an average of four hours after the completion of the trauma. Spinal anesthesia maintained for three to four hours prevented all symptoms of shock and allowed uneventful recoveries in 10 of 12 animals. A local anesthesia of the legs by means of pressure (tight tourniquets) maintained for a two hour period protected 7 of 12 dogs against shock and considerably prolonged the survival of 4 more. Thorough infiltration of the areas to be traumatized with a 4 per cent procaine solution, repeated frequently over a three to four hour period, prevented fatal shock in 7 of 10 dogs. The evidence indicates that a flow of nociceptive stimuli from the traumatized regions, unless prevented by spinal anesthesia or a local block, is an important contributing factor in the initiation of the shock state which follows the described type of muscle trauma.

American Journal of Surgery, New York

63:1-150 (Jan.) 1944

Invagination Operation for Esophageal Diverticulum. D. E. Ross.—p. 3.
Recognition and Management of Brain Abscess. J. M. Meredith.—p. 10.
Complicated Traumatic Dislocations of Hip. W. D. Griesmer.—p. 16.
Management of Varicose Veins in Army Personnel. A. S. White, J. J. Haberer and S. Gendel.—p. 28.
Treatment of Burns: Symposium. H. May.—p. 34.
Skin as Source of Systemic Infection. I. W. Held and I. Busch. —p. 47.
Reduction and After-Treatment of Posterior Dislocation of Elbow, with Special Attention to Brachialis Muscle and Myositis Ossificans. L. K. Loomis.—p. 56.
Acute Perforated Duodenal Ulcer. V. G. Burden.—p. 61.
Repair of Urinary Bladder Herniation. A. H. Iason.—p. 69.
Malignant Tumors of Stomach. F. De Amesti.—p. 78.
Submuscle Pelvic Tissue Spaces: Anatomy and Clinical Considerations. B. H. Brunkow.—p. 86.
Appendicitis: Review of 4,283 Cases. M. Behrend.—p. 90.
*Sulfonamides in Fresh and Contaminated Wounds: Mode of Application. E. Holman.—p. 96.
*Treatment of Skeletal Pain with Procaine Injections: Analysis of 295 Cases in General Practice. R. L. Gorrell.—p. 102.
Venography as Essential Aid in Treatment of Varicose Veins. S. H. Sedwitz and E. C. Baker.—p. 105.
*Rupture of Rectosigmoid by Compressed Air: Case Report. S. A. Swenson Jr., and H. N. Harkins.—p. 141.

Sulfonamides in Fresh and Contaminated Wounds.—Holman applied in the management of wounds a mixture of equal parts of sulfanilamide and sulfathiazole powder or crystals in generous amounts to every pocket and crevice of the wound at the earliest possible moment. The application of the drug should be repeated when débridement is performed. When operating in a dirty or potentially contaminated wound, as drying a débridement or in the closure of a colostomy, the drug mixture should be applied as the operation proceeds and as freshly incised areas are exposed in the operative field. In open resections of the intestinal canal, in lobectomy or pneumonectomy, the raw surfaces of incised tissues should be impregnated with the drugs before opening the viscus or the bronchus. In localized or general peritonitis the drug should be brought into contact with all contaminated surfaces. Mixed with blood and tissue fluids, the drug is thinly smeared or rubbed over all infected peritoneal surfaces, insuring maximum absorption and least interference with healing. Dumping large masses of the dry powder into a wound is inviting poor healing, as it may then act as a foreign body. "Frosting" a wound reaches only the superficial surfaces. After operation, when vomiting or gastric suction prevents their oral administration, the drugs may be administered subcutaneously, intravenously or rectally. Sulfanilamide may be administered by hypodermoclysis in 0.8 per cent watery solution. Five Gm. of sodium sulfathiazole dissolved in 100 cc. of distilled water may be given intravenously twice daily. Sulfanilamide may be given intravenously every six hours as a 1 per cent solution. Four to 6 Gm. of sulfanilamide powder suspended in 100 cc. of tap water may be administered by rectum. Orally, 4 to 6 Gm. of the sulfonamides may be given as the initial dose, and 1 Gm. every four hours thereafter. Apparent cyanosis, a scarlatiniform rash or a high unexplained fever demand the discontinuance of the drug. A daily urinary output of at least 1,000 cc. is imperative, and 1,500 cc. is preferable. Many cases, including compound injuries of the extremities, skull, thorax and abdomen, have been treated successfully according to these principles.

Treatment of Pain with Procaine Injections.—Gorrell injected procaine, nupercaine or eucupin to 295 patients to counteract pain. Sprained ankle, osteoarthritis or rheumatic conditions were the chief causes of pain. The relief of pain by local anesthetic injections does not free one from the responsibility of determining a possible serious cause for the pain. The so-called trigger point should be ascertained before the injection is made. If the patient does not wince when pressure

is made on a point, it is probably not the one sought. If finger tip pressure causes the patient to say "That is my pain," one may confidently predict relief. If several areas of tenderness are found, each should be indicated with a skin marking pencil or a drop of colored antiseptic solution. Only those causing wincing tenderness should be injected. Procaine injections will cure the great majority of muscle, fascia and ligament pains. Relief is only temporary, though often gratifying, if an organic cause is still at work. In the long term view such injections must be considered as only a part of the treatment of osteoarthritis and rheumatic conditions. The correction of posture, removal of foci of infection, reduction of weight, avoidance of chilling and overwork and the daily use of "limbering up" exercises must all be considered.

Rupture of Rectosigmoid by Compressed Air.—The subject of the report by Swenson and Harkins was a man aged 43 who was hospitalized from an industrial plant with the history that an hour before admission, while he was bending over, a fellow worker turned a compressed air hose at the patient's buttocks and released a sharp blast of air. The patient fell to the floor, immediately felt sharp abdominal pain and noted that he was "blown up like a balloon." Physical examination was negative except for considerable abdominal distention, rigidity and tenderness. The abdomen was highly tympanitic to percussion. A diagnosis of traumatic perforation of the rectosigmoid was made and immediate operation was decided on. Continuous gastric suction was begun and the operation was done under spinal anesthesia. When the peritoneum was opened, at least 2 liters (possibly 3 to 4 liters) of air gushed out under sufficient pressure to cause a whistling sound and resulting in appreciable collapse of the distention. The bowel was explored from one end of the rectum to and including the stomach, and four lacerations in the rectum and rectosigmoid were found. The remainder of the bowel showed considerable edema. The lacerations were repaired and the patient's recovery was comparatively uneventful. This case brings the total number of cases of rupture of rectum and of rectosigmoid caused by compressed air to 64. Immediate operation is indicated when the condition is diagnosed or suspected.

American Review of Tuberculosis, New York

49:1-114 (Jan.) 1944

Tubercle Endotoxoid in Treatment of Tuberculosis in South African Natives. E. Grasset.—p. 1.
Radiation Therapy for Obstructing Tuberculous Hilar Lymph Nodes: Case Report. K. Freireich.—p. 31.
Lower Lobe Bronchiectasis Associated with Tuberculosis. E. B. Mitchell and T. F. Thornton Jr.—p. 38.
Contact Cases: Relation to Type of Case to Which They Are Exposed and to Age. G. E. Harmon and B. H. Douglas.—p. 48.
Sexual Desire in Tuberculous Women. Margaret Haggan.—p. 53.
*Rheumatic Diseases and Tuberculosis. E. Loewenstein.—p. 58.
Ingestion Tuberculosis in Normal and in Vaccinated Rabbits: "Hematogenous Pulmonary Tuberculosis" in Man Considered. E. M. Medlar and K. T. Sasano.—p. 78.
Effects of Amigen and Amino Acids on Growth of Tubercle Bacilli. P. D. Crimm and Veronica F. Martos.—p. 94.
Experimental Tuberculosis in Hypophysectomized Rats. M. M. Steinbach, C. J. Duca and N. Molomut.—p. 105.
Carbol Fuchsin in Propylene Glycol for Rapid Staining of Tubercle Bacillus: Preliminary Report. T. G. Randolph and R. F. Mikell. p. 109.
Loewenstein's Medium: Improved Method of Preparing It. Ruby G. Kelly and E. A. Murphy.—p. 110.

Rheumatic Diseases and Tuberculosis.—Loewenstein emphasizes that it is the presence of tubercle bacilli in loco morbi that proves the nature of the disease and not the reaction of the tissue. The tubercle is only a facultative phase in the life cycle of the tuberculous focus. The presence of the tubercle bacilli is a direct proof, the reaction of the tissue an indirect evidence. Roessle came to the conclusion that tuberculosis and rheumatism are two representatives of allergic disease and that Aschoff's nodules represent the anatomic substratum of allergy. It has been shown that rheumatism is a disease not of the joints alone but of the whole mesenchyme. Tubercle bacilli have been found in the blood and joint fluid of patients suffering from acute rheumatic fever, endocarditis and chorea. Tubercle bacilli have been found post mortem in the blood, heart, spleen and tonsils and in rheumatic polyarthritis, endocarditis and chorea. They may be demonstrated in the apparently normal spinal fluid of patients with chorea and sometimes in the urine. Lymph nodes in the neighborhood of affected joints show many fresh tubercles and bacilli in microsections. The anatomic appearances, especially of the heart, rather approximate those of tuberculosis than those of streptococcic infection. Streptococci are rarely found in the blood; they cannot produce serous effusions. The sedimentation rate of rheumatic fever is closely similar to that in miliary tuberculosis. Tubercle bacilli can be found not only in the blood of patients with rheumatic eye diseases but also in the tissues of the eye in cases of iritis, iridocyclitis, choroiditis and sympathetic ophthalmia. Foci similar to the foci in miliary tuberculosis can be found by ophthalmoscopy in 61 per cent of the cases of acute rheumatic fever. Aschoff's nodules are frequently found in the heart of the tuberculous cadavers without rheumatism in the clinical history. Untreated patients with rheumatic fever have developed miliary tuberculosis. Antibodies against tubercle bacilli are present in over 80 per cent of rheumatic patients. The curve of tuberculin sensitivity shows a characteristic change from anergy in the first few days to hyperergy in the convalescence. The treatment with tuberculin in homeopathic doses has been recommended. The same anatomic appearances as those found in rheumatic fever can be produced by pure strains of tubercle bacilli after reinjection in the peritonsillar region of rabbits. The occurrence and the recurrence of rheumatic fever are dependent on an endogenous or exogenous reinfection; superimposed infections may mobilize sleeping foci of tubercle bacilli.

Anesthesiology, New York

5:1-112 (Jan.) 1944

*Comparative Value of Various Parenteral Fluids. G. A. Bradasch.—p. 1.
Responsibility of Anesthetist in Reducing Operative Complications of Thoracic Surgery. H. C. Maier.—p. 11.
Transfusions of Blood and Plasma. T. H. Seldon, J. S. Lundy and R. C. Adams.—p. 22.
Ionization of Air: Method for Dispersion of Charges of Static Electricity. H. C. Slocum and R. Finvold.—p. 33.
Spinal Anesthesia with Monocaine Formate: Results in 2,230 Cases. E. A. Rovenstine and Virginia Apgar.—p. 40.
Soda Lime Containing Indicators. J. Adriani.—p. 45.
Continuous Spinal Anesthesia. D. E. Hale and C. M. Shaar.—p. 53.
New Modification of Conventional Laryngoscope and Technic for Laryngoscope and Technic for Laryngoscopy. S. C. Wiggin.—p. 61.
Spinal Anesthesia in Therapy of Pulmonary Edema: Preliminary Report. S. J. Sarnoff and H. W. Farr.—p. 69.

Comparative Value of Various Parenteral Fluids.—Bradasch reviews the physiologic factors that enter into the maintenance of a normal body fluid balance, giving particular attention to the role of water, the electrolytes and the blood proteins. Crystalloids are effective for replacing lost electrolytes and for combating metabolic disease. Because of ready diffusibility, crystalloids generally are not satisfactory as supportive agents in hemorrhage or shock. Acacia, because of its toxic effects, is not entirely satisfactory as a parenteral supportive fluid even though it possesses suitable colloidal properties. Bovine plasma, bovine albumin, isinglass, crystalline hemoglobin, human ascitic fluid, cadaver blood and placental blood, because of limited availability or uncertain properties, cannot be considered practical agents for general parenteral use. Pectin, because of its plasma-like osmotic properties, easy availability and nonantigenic qualities, has promise of being a suitable supportive agent for parenteral use. Human serum albumin and human plasma are agents of unquestionable value as parenteral supportive fluids. Ease of storage and transport and the stability of these agents make them highly valuable as blood substitutes. Whole blood remains the best agent for treatment of acute blood loss or shock.

Archives of Otolaryngology, Chicago

39:1-108 (Jan.) 1944

Changes of Temporal Bone in Leukemia and Osteitis Fibrosa. H. Brunner.—p. 1.
Effect of Sphincteric Action of Larynx on Intra-Abdominal Pressure and on Muscular Action of Pectoral Girdle. J. J. Pressman.—p. 14.
Benign Nontuberculous Bronchial Stenosis. H. W. Schmidt.—p. 43.
Cancer of Larynx: Radiotherapeutic Test as Aid in Choosing Between Operation and Irradiation. M. Cutler.—p. 53.
New Contributions on So-Called Otosclerosis of Chickens. F. Altmann.—p. 59.
Otitis Media and Complications. B. R. Dysart.—p. 87.

Canadian Journal of Public Health, Toronto

35:1-48 (Jan.) 1944

Housing and the Health Officer. C. E. A. Winslow.—p. 1.
Britain's Development of Preventive Medicine. A. S. MacNalty.—p. 10.
Venereal Disease Control Program in United States. J. R. Heller Jr. —p. 16.
Community Action in Venereal Disease Control. W. Clarke.—p. 26.
Recent Developments in Milk Control. C. K. Johns.—p. 33.

Canadian Medical Association Journal, Montreal

50:1-102 (Jan.) 1944

What the General Practitioner Should Know About Chemotherapy of Bacterial Infections. E. E. Osgood.—p. 1.
Malnutrition in Canada. L. B. Pett.—p. 9.
Water-Borne Tularemia in Western Canada. M. R. Bow and J. H. Brown.—p. 14.
*Use of Acrylic and Elastic Resin Prostheses for Facial Deformities. Eleanor Sweezey, H. Baxter and R. Copeman.—p. 16.
Myocardial Abscesses in Subacute Bacterial Endocarditis. J. E. Barnard and M. J. Nareff.—p. 21.
Plasma Proteins in Shock. E. S. Mills.—p. 24.
*Treatment of Angina Pectoris and Peripheral Vascular Disease with Sex Hormones. G. F. Strong and A. W. Wallace.—p. 30.
Medical Aspects of Casualty Insurance. A. P. Guttman.—p. 33.
Catamnestic Study of 267 Neurosyphilitic Patients. F. Kalz and Barbara Dean.—p. 39.
Headache of Nasal Origin. G. E. Tremble.—p. 43.
Epidemic Parotitis (Analysis of 250 Cases in Male Adults). E. M. Worden.—p. 47.
Acute Myelitis Following Measles. L. N. Pearlman and W. T. Shirreff. —p. 50.
Experience with Hingson-Edwards Technic of Continuous Caudal Analgesia. J. S. Chaikoff.—p. 52.
Tuberculosis of Bursa in Region of Hip Joint. J. Farr.—p. 60.

Acrylic and Elastic Resin Prostheses for Facial Deformities—Sweezey and her collaborators call attention to a new synthetic resin for surgical prostheses. The resin is an acrylic substance. It comes in the form of two powders (pink and colorless) and a liquid which binds them. Small quantities of other colors also are supplied. These powders can be mixed in varying amounts until the required shade and translucency is obtained. An elastic resin has been developed recently which, after processing, is rubber-like in many of its characteristics and is processed, like acrylic resin, with heat and pressure. The authors have made an ear, part of a nose and a whole nose of both elastic and the acrylic resin and have found the former to be a more suitable medium, although the latter has many desirable qualities. All 3 of the patients for whom the authors made prostheses had carcinoma. The partial nose is a temporary restoration until a surgical operation can be performed, but the other two are permanent prostheses. The resin is light, translucent and easily manipulated and is unaffected by ordinary heat, cold, moisture and light. It is tolerated by tissues, easily duplicated from the original mold and inexpensive. It can be trimmed and repaired with a hot spatula. It can be stained in a graduation of shades.

Sex Hormones in Angina Pectoris and Peripheral Vascular Disease.—Patients were chosen for this treatment who had the typical syndrome of pain on effort relieved by rest and glyceryl trinitrate and who had other signs suggesting that the angina was arteriosclerotic in origin. All of these patients had suffered from angina for a period of from several months to several years and they knew the relief they obtained from glyceryl trinitrate. Patients were asked to keep a day by day record of anginal attacks and the number of glyceryl trinitrate pills necessary in each day to control attacks. All were started on a series of twelve injections given at intervals of four to five days; some received more and some less. In men each injection consisted of 25 mg. of testosterone propionate and in women each injection was 5 mg. of estradiol dipropionate. Only 4 cases of peripheral vascular disease were treated. Seventeen of 20 patients with angina pectoris showed some improvement. Of these 6 showed fairly definite improvement which lasted from three months to one year; the rest showed slight to moderate improvement which did not last long after treatments stopped. Of the 4 patients with peripheral vascular disease treated 1 reported considerable and 2 slight improvement. The fourth reported no improvement. None of these patients showed definite change in pulsation in the dorsalis pedis arteries.

Cancer Research, Baltimore

4:1-72 (Jan.) 1944. **Partial Index**

Genetic Character of Neoplastic Cells as Determined in Transplantation Experiments, with Notes on Somatic Mutation Theory. J. Furth, M. C. Boon and N. Kaliss.—p. 1.
Genetic Analysis of Induction of Tumors by Methylcholanthrene: VI. Epidermoid Carcinomas and Associated Tumors in Mice of F_1-F_7 Generations of NH Descent. W. L. Williams and L. C. Strong. —p. 11
Progesterone Treatment of Uterine and Other Abdominal Fibroids Induced in Guinea Pig by Alpha-Estradiol. A. Lipschütz and M. Maas.—p. 18.
Effect of Testosterone Propionate on Adrenals and on Incidence of Mammary Cancer in RIII Strain of Mice. J. Heiman.—p. 31.
Prothrombin Concentration in Plasma of Normal and Leukemic Rats. E. Sturm.—p. 35.
Study of d-Amino Acid Oxidase, Uricase and Choline Oxidase in Livers and in Isolated Liver Cell Nuclei of Rats Bearing Transplanted Tumors. T. H. Lan.—p. 37.
Specific Injurious Action of Alloxan on Pancreatic Islet Cells and Convoluted Tubules of Kidney. Comparative Study in Rabbit, Dog and Man. A. Brunschwig and J. G. Allen.—p. 45.
Metaplasia of Bronchial Epithelium in Rats Following Application of Benzpyrene. T. F. Thornton Jr., and W. E. Adams.—p. 55.

Illinois Medical Journal, Chicago

85:1-52 (Jan.) 1944

Postoperative Pulmonary Embolism: Statistical Analysis of Cases Occurring During 1940 in St. Anthony's Hospital. R. Johnson.—p. 13.
Malingering in Nurses with Hysteria. I. R. Sonenthal.—p. 17.
Therapeutic Diets and War Food Rationing. H. K. Scatliff and Ruby M. Benedict.—p. 22.
*Influence of Draft on Formation of Psychoses in Women. M. Wallenberg.—p. 25.
Study of Results of Electric Shock Treatment. R. Gronner.—p. 29.
Nonspecific Ulcerative Colitis—Bloody Flux. C. J. Drueck.—p. 35.

Influence of Draft on Psychoses in Women.—Wallenberg says that among the female admissions at the Manteno State Hospital there were a number whose histories indicated that the onset of mental symptoms was connected with the prospective or actual draft of a near relative. The records of 12 such patients were carefully studied. Objective exploration revealed that in no case was the drafting of a love object the only precipitating factor. Other severe traumas were present (the death of a brother, a drunken husband, disappointment in love), all clearly showing the conflict of ambivalence. In many cases the draft merely represented a rationalization, a displacement from the conflict centering around the actual or ideational loss of an ambivalently loved person. The inner need for rationalization unconsciously finds expression in the information advanced by relatives and friends who seek to explain the symptoms of the patient in terms of concrete causes. The information from relatives, although rendered in good faith, proved to be misleading with regard to the actual onset or origin of the psychosis.

Journal of Aviation Medicine, St. Paul

14:329-400 (Dec.) 1943

Pursuitmeter with an Application in Aviation Medicine: Effect of Low Atmospheric Pressure. H. Lamport, R. D. Brookes, C. W. P. Walter and T. J. Putnam.—p. 336.
Effect of Pressure on Carotid Sinus at Various Altitudes: Case Reports. L. Palitz, T. Frist and E. Kocour.—p. 346.
*Flicker Fusion Tests as Measure of Fatigue in Aviators. A. Graybiel, J. L. Lilienthal Jr. and O. Horwitz.—p. 356.
Report of Case of Severe Anoxic Anoxia with Recovery. R. L. Ward and O. C. Olson.—p. 360.
*Airsickness in Bomber Crews. D. M. Green.—p. 366.
Aeroneuroses in Bomb Training Unit. D. M. Green.—p. 373.
Medical Problems of Civil Air Patrol, Office of Civilian Defense. J. G. Stubenbord III.—p. 378.
Notes on Classification, Selection and Training. B. Kaufman.—p. 383.

Flicker Fusion Tests as Measure of Fatigue in Aviators.—Graybiel and his associates point out that in a study of the fatigue which results from mental stress or hazardous occupation rather than muscular effort the most pressing problem is establishing some objective measure of the fatigue. A study by the U. S. Public Health Service on fatigue in truck drivers indicated that flicker fusion tests, in addition to a battery of psychomotor tests, gave some evidence of the deterioration which occurred. The authors studied the flicker fusion test as a measure of fatigue in aviation pilots. The 32 subjects tested were naval aviators acting as instructors. Their

flight duties consisted in dual instruction and the supervision of formation flights. Flicker fusion levels were measured when the pilot reported to the squadron in the morning and again shortly after completion of the last flight of the day. At the time of the flicker measurement data were recorded regarding hours of sleep during the preceding night, time of last meal, hours flown and sense of being "tired" or "not tired." Control observations were made on days when bad weather prevented flying. Flicker fusion was tested by means of an electronic oscilloscope. One hundred and forty-three double determinations of flicker fusion were made. No significant correlation was discovered between the alteration in flicker fusion frequency and the state of fatigue. The flicker fusion test offered no promise as an objective measure of fatigue in aviation.

Airsickness in Bomber Crews.—Green made a survey of 1,006 flying personnel in a combat bomber crew training unit. An average of 1 in 6 of all personnel suffered attacks of airsickness regardless of previous air experiences. Symptoms vary widely in the individual on successive days and among different persons exposed to a particular air situation. Gastric complaints range from sensations of fulness or vague discomfort through gradations of nausea to vomiting and retching. Loss of appetite may occur. Sweating and pallor often are absent. Some complaining of being hot and dry seek cold air. Various head sensations are mentioned, including aching, dizziness, pressure and tightness. Many speak of a generalized feeling of nervousness. Some are unable to localize their symptoms beyond stating that they feel "sick all over." Pilots are least susceptible crew members, but, despite the advantages of over two hundred flying hours, about 1 in 8 suffered attacks subsequent to joining the unit. Symptoms occurred usually while riding as passenger or copilot and were overcome on taking over the controls. Approximately 80 per cent of men developing airsickness in the combat plane were occupants of the navigator's compartment, although this section of the aircraft approximates the center of gravity and is the area of least relative motion. Lack of opportunity for visual orientation may influence susceptibility in this section, for occupants at times avert or suppress sickness by moving forward to the pilot's compartment. Observations suggest that airsickness primarily is not a motion sickness but a true aeroneurosis. On this hypothesis a therapeutic approach was devised. Thirty-five crew personnel grounded for repeated severe airsickness were scheduled in small groups for daily flights of graded duration. Prior to take off, pentobarbital sodium 0.100 Gm. and atropine sulfate 0.0013 Gm. were administered orally to each man. On successive flights personnel were rotated as far as possible through different positions in the airplane. On reaching a stage in which a three hour period caused no distress, transfer to the combat plane was made and medication gradually eliminated. Ten men were restored to full flying status and have given no indication of relapse. Nine have improved to the point of being placed on crews on probationary status. Four were transferred prior to completion of treatment. Six showed no perceptible improvement.

Military Surgeon, Washington, D. C.

94:1-64 (Jan.) 1944

Health and Physical Efficiency in Naval Warfare. W. L. Mann Jr.—p. 4.
Diagnosis of Rickettsial Diseases: Report of Unusual Case with Jaundice. G. C. Cheney and E. J. Denenholz.—p. 9.
Some Domestic Problems in Military Sanitation. A. Laird.—p. 20.
Hyperglycemia Due to Suspected Pancreatic Trauma: Report of Case. A. J. Jensen and C. C. Gill.—p. 26.
Torula Histolytica Meningoencephalitis: Report of Case; Spinal Fluid Studies and Autopsy Report. W. S. Hagen.—p. 29.
Diagnosis of Meningococcemia: Presentation of 3 Cases. J. M. Blumberg and J. M. Suter.—p. 35.
Streamlined First Aid. H. S. Johnson.—p. 41.

New Jersey Medical Society Journal, Trenton

40:453-500 (Dec.) 1943

Early Treatment of Thermal Burns—I. J. M. Carlisle.—p. 459.
Clinical Importance of Disturbances of Protein Metabolism. A. O. Wilensky.—p. 462.
Sulfadiazine in Acute Follicular Infections of Tonsils and Pharynx. M. Kraemer.—p. 468.

Rhode Island Medical Journal, Providence

27:1-48 (Jan.) 1944

Planning for Security. E. M. Porter.—p. 9.
Primary Atypical Pneumonia, Etiology Unknown. F. B. Cutts and H. A. Lawson.—p. 11.
Recent Epidemic of Poliomyelitis. E. J. West.—p. 13.
Kenny Treatment of Poliomyelitis. W. A. Horan.—p. 16.

Tennessee State Medical Assn. Journal, Nashville

36:453-492 (Dec.) 1943

Scientific Use of Physical Therapy. Mildred F. Heap.—p. 455.
A, B, C's of "Social Security"—Present and Proposed. C. A. Jackson.—p. 457.
Meningococcemia with Bilateral Adrenal Hemorrhage (Waterhouse-Friderichsen Syndrome): Report of 2 Cases. M. Kasich and S. Disick.—p. 464.

37:1-40 (Jan.) 1944

Federal Plan for Providing Obstetric and Pediatric Care for Wives and Infants of Servicemen. L. F. Foster.—p. 1.
Successful Treatment of Gout. E. C. Bartels.—p. 5.
Unsolved Problems in Preoperative and Postoperative Care of Patients with Hyperthyroidism. C. E. Rea.—p. 10.
Venereal Disease Case Reporting as Protection to Physician-Patient Relationship. M. C. Brown.—p. 15.
Coronary Occlusion. S. S. Riven.—p. 18.

Virginia Medical Monthly, Richmond

71:1-56 (Jan.) 1944

Medical Aspects of Aircraft Carrier Warfare. J. Q. Owsley.—p. 4.
Mechanism of Esophageal Voice Following Laryngectomy. E. T. Gatewood.—p. 9.
Clinical Management of Lobar Pneumonia. J. F. Waddill.—p. 14.
Treatment of Burns. A. J. Mourot.—p. 25.
Outlook for Nursing Profession. J. M. Emmett.—p. 29.
Study of Three Thousand Blood Transfusions. A. Klein.—p. 33.
Practical Method for Localization and Removal of Foreign Bodies. W. S. Hotchkiss.—p. 37.
Use of Penicillin in Statu Nascendi. F. J. von Gutfeld.—p. 39.

War Medicine, Chicago

5:1-70 (Jan.) 1944

Psychoses in Officers in World War II. A. M. Duval.—p. 1.
Causes of Pain in Feet After Prolonged Immersion in Cold Water. J. C. White and S. Warren.—p. 6.
Bacillary Dysentery: Bacteriologic and Clinical Analysis of 251 Cases Occurring in Army Camp. J. W. Adams Jr. and R. T. Atwood.—p. 14.
Injuries to Peripheral Nerves: Review of Recent Literature. C. Brenner.—p. 21.
Value and Shortcomings of Cultural Method in Diagnosis of Gonorrhea with Special Reference to Use of Peizer Medium. M. Trowbridge Jr. and Ruth M. McConkey.—p. 36.
Experimental Burns: III. Changes in Plasma Albumin and Globulin. C. Lischer, R. Elman and Harriet W. Davey, with technical assistance of H. Riedel.—p. 43.
Studies on Endamoeba Histolytica: III. Destruction of Cysts of Endamoeba Histolytica by a Hypochlorite Solution, Chloramines in Tap Water and Gaseous Chlorine in Tap Water of Varying Degrees of Pollution. S. L. Chang.—p. 46.
Simple Rapid Test for Detection of Sulfonamide Compounds in Urine: Preliminary Report. R. Hubata.—p. 56.

Bacillary Dysentery in Army Camp.—Adams and Atwood give an account of their experience with the isolation and identification of pathogenic enteric organisms from the stools of patients admitted to the station hospital, Camp Claiborne, Louisiana, from September 1941 to October 1942 with illnesses diagnosed clinically as dysentery, diarrhea or gastroenteritis. Cultures were taken of approximately 2,000 stools from patients with diarrhea. From these cultures 642 strains of organisms considered to be pathogenic were isolated from 251 patients with definitely established dysentery. A member of the Shigella group was isolated from 226, or 90 per cent, of the patients. Of these, 178, or 70.9 per cent of the total, yielded Shigella paradysenteriae (Andrewes V-Z spectrum) and were benefited by therapy with a sulfonamide compound. Twenty, or 8 per cent, of the total number of patients yielded Shigella Newcastle and were probably benefited by treatment. Twenty-eight infections due to Shigella sonnei and Shigella alkalescens did not respond to chemotherapy. A member of the Salmonella group was recovered in 6 cases. An organism belonging to the paracolon group was recovered in 33 cases in which this organism was believed to be of pathologic significance.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2:805-840 (Dec. 25) 1943

Population Problem of India. D. B. Blacklock.—p. 805.
*Infective Hepatitis: With Special Reference to Oral Hippuric Acid Test. I. Gordon.—p. 807.
Significance of Blood Pressure Readings in General Surgical Work, with Special Reference to Cardiac Index. H. Dodd.—p. 811.
Continuous Administration of Intravenous Anesthesia: A Simple Method. F. W. Roberts and B. A. Sellick.—p. 813.
Fatal Case of Cerebral Malaria. I. B. Sneddon.—p. 814.

Oral Hippuric Acid Test in Infective Hepatitis.—Gordon reports that between December 1941 and September 1942 168 cases of infective hepatitis were admitted to a hospital in the Middle East forces. Two fairly distinct types of onset were recognized: (1) cases with febrile attack and (2) cases without febrile attack. In the 88 patients with febrile attack the onset was usually sudden, often with shivering and occasionally with a rigor. Fever ranged from 100 to 102 F., the highest recorded temperature being 104 F. The pulse rate usually varied from 80 to 90 and often dropped to 50 or 60 when jaundice became established. Headache was noted in 85 per cent. Malaise, rarely amounting to lethargy, was almost constant. Two thirds complained of backache and/or pains in the limbs. Gastrointestinal symptoms were universal. The average duration of the prodromal stage before the appearance of jaundice was 5.8 days. In the 80 cases without a febrile attack the preicteric stage was of shorter duration, averaging 4.1 days. Gastrointestinal symptoms were evident from the first and, though similar to those in the "febrile" group, were not so constantly present. After the appearance of jaundice the physical findings and subsequent clinical course were almost identical in the two groups. The average duration of icterus was twenty-four days. The liver was palpable in 50 per cent of the cases. Gross hepatomegaly was associated with prolonged jaundice, and the larger the liver the longer was the duration of icterus. The diagnosis in the preicteric stage is often difficult and in many cases will remain uncertain until bile pigment appears in the urine. Hippuric acid tests for liver function by the oral method were performed in 14 cases when icterus was at about its height. Evidence of impaired function was found in all cases. Recovery of liver function (as measured by the hippuric acid test) appears to be slow. In the convalescent stage of the illness, when icterus had just disappeared from the skin but remained in the sclerotics, evidence of liver insufficiency was demonstrated in 19 (65 per cent) of the 29 cases tested. Second attacks appear to be no worse than the first.

Journal of Royal Naval Medical Service, London

29:225-286 (Oct.) 1943

Frost Bite. J. Hamilton.—p. 225.
Abdominal Lesions Requiring Urgent Surgery. J. F. M. Campbell.—p. 229.
Choice of Anesthesia for Abdominal Surgery at Sea. J. Lees.—p. 233.
Investigation into Incidence of Trachoma in Maltese Islands, Its Early Diagnosis and Mode of Spread with Special Application to Armed Forces. D. P. Gurd.—p. 237.
Hypovitaminosis C and Infective Gingivitis. J. W. Buchanan.—p. 249.
External Otitis. G. A. Ballance.—p. 255.
Observations on Thirst. R. S. Allison and M. Critchley.—p. 258.
Medical Arrangements for Action in Small Ships. R. G. Allen.—p. 266.
Acrylic Resin Splints. R. L. V. Henderson.—p. 268.
Second Attack of Meningococcal Meningitis Preceded by Meningococcal Septicemia. G. S. Brewis.—p. 268.
Case of Geniculate Herpes Simulating Acute Mastoiditis. C. D. Coode.—p. 269.
Air Raid Casualty: Severe Frontal Lobe Injury. D. F. Smith.—p. 271.
*Pulmonary Signs in Malaria. E. M. Stirk.—p. 272.

Pulmonary Signs in Malaria.—Stirk reports a feature of malaria which has been observed in an area in which malaria, sandfly fever and respiratory infections are common. It has been his experience that the initial symptoms in the three disease groups may be very similar until blood films have been taken to establish or eliminate the possibility of malaria. The author mentions 4 cases to illustrate this fact. He describes a case which demonstrates the development of an early pneumonia after the malarial pyrexia had been controlled. This case is important because it illustrates that sulfapyridine and quinine are not incompatible when given concurrently. The author thinks that the association of bronchitis and incipient pneumonia with proved attacks of malaria is more common than medical writings suggest. In the region in which he made his observations approximately 10 per cent of the patients with malaria presented pulmonary symptoms.

Revista de Otorrinolaringología, Santiago

3:49-160 (Sept.) 1943. **Partial Index**

*Bacteriologic, Clinical and Therapeutic Study of Acute Otitis Media in Children. A. Latorre A. and F. Landa P.—p. 63.
Value of Bronchoscopy in Bronchopulmonary Tuberculosis. M. D. Rodriguez D.—p. 77.

Acute Otitis Media in Children.—Latorre and Landa studied 143 cases of acute otitis media in children whose ages ranged from 1 month to 11 years. Streptococcus hemolyticus was found to be the commonest infective agent, being responsible for 89 cases (59.30 per cent) of the otitis media in this group. This organism was associated with the staphylococcus in 36 cases. Pneumococci were found in 32 cases (22.37 per cent). In the great majority of cases (78.32 per cent) otitis media healed without complications or sequelae in from five to twenty-five days. In 18 cases (12.58 per cent) the acute process was followed by chronic otitis. Of 4 cases in which mastoiditis developed, 2 responded well to medical treatment and 2 required surgical intervention. In 11 cases retroauricular subperiosteal abscesses formed. Bell's palsy in 1 case was promptly controlled by a mastoid operation. Meningeal and vascular involvement were not observed. There was no death. Treatment consisted, as a rule, in paracentesis, local heat, ear washes and nasal instillation. Sulfanilamide and sulfathiazole were used in 45 cases, of which 37 healed completely in an average period of twenty days and chronic otitis developed in 7. The results showed that sulfonamide treatment is not more effective in otitis media than the nonchemotherapeutic procedures used.

Revista de Tuberculosis, Havana

7:147-400 (April-June) 1943. **Partial Index**

*Air Cysts of Lung in Children: Clinical, Roentgen and Anatomic Study. T. Valledor, E. Martel, R. Fuste and A. Fernandez Baltrons.—p. 147.
*Acute Edema of Lung in Pulmonary Tuberculosis. A. Fernandez Conde, E. Alvarez Lastra and R. Meneses Mañas.—p. 282.

Cystic Disease of Lungs in Children.—Valledor and his collaborators report observations on 17 young children with cystic disease of the lungs. The majority of the patients were newborn infants and infants. There was neither syphilis nor tuberculosis in their family histories. A necropsy was performed on 3 patients. Cystic disease of the lung is a congenital malformation having its origin in a mesodermal hypoplasia of the bronchi and a zone of lung parenchyma. The latter remains in the stage of fetal development. Air cysts of the lung are always multiple, although in some cases apparently, but not really, solitary. The age at which the clinical symptoms appear is variable. Latent forms are rare. The cysts are frequently complicated by recurrent respiratory disease, which is controllable by early sulfonamide therapy. The most frequent clinical forms of the disease in children are those with recurrent attacks of more or less acute dyspnea, those with chronic or recurrent disease of the respiratory tract and those with pulmonary suppuration. The diagnosis of these types is confirmed by bronchography and tomography. The prognosis is grave. Lobectomy or pneumonectomy is the only effective therapy.

Acute Edema of Lung in Pulmonary Tuberculosis.—According to Fernandez Conde and his collaborators edema of the lung in pulmonary tuberculosis is rare. A man with bilateral pulmonary tuberculosis, while being hospitalized for observation, suddenly died in an attack of asphyxia. The postmortem showed besides lesions of bilateral pulmonary tuberculosis acute edema of the lungs without involvement of any other organ. The authors believe that in pulmonary tuberculosis acute depression of the defense mechanisms with consequent loss of the immunoallergic balance is the cause of a perifocal edematous reaction of tuberculous nodules. Edema rapidly passes to the pulmonary alveoli because the pulmonary capillaries are hyperpermeable in pulmonary tuberculosis.

Book Notices

Managing Your Mind: You Can Change Human Nature. By S. H. Kraines, M.D., and E. S. Thetford. Cloth. Price, $2.75. Pp. 374. New York: Macmillan Company, 1943.

This is one of the better written self-help books. It presents and analyzes the difficulty which any one would meet in adjusting to his environment. The major thesis of the book is that "man is a total organism with both physical and psychological entities which are not separate." The authors feel that an individual to be in perfect health must have excellent physical health as well as sound mental health, which involves control of our emotional states. The entire book is given over to demonstrate the validity of the statement that one "can change one's mind." It is a detailed explanation of the technic whereby the external situation can be controlled by the individual, and it guarantees that the individual can learn to develop such control of mind, body and emotion that they will work together smoothly. They distinguish between emotional symptoms and physical symptoms. They feel that the individual must understand himself in terms of his elemental primary needs as well as in terms of the social demands which are made on him. The book is divided into eighteen chapters. A very clever device of using thought provoking questions brings out and develops the patient's self analysis and is used together with apt illustrations well within the range of the average person's experience. It is a safe book to put in the hands of a layman. It is definitely constructive and helpful to the reader to organize his thinking. The psychologic and physiologic background is pertinent as well as sound. The technics and facts are given and the various analytic terminology brought in, where necessary, to elaborate their explanations. They argue less by analogy than most books which are developing personal achievements. They use case history illustrations conservatively. It is particularly valuable to psychiatrists who may wish to give it to patients "to point up" their thinking and to open up new avenues for further analytic exploration. Its approach to the problem of personality problems is a positive one. It has much to offer any reader who wishes to change his habits of emotional thinking and reaction to achieve the goal of all, "happiness."

Experimental Surgery: A Laboratory Guide for Undergraduate Students. By J. M. McCaughan, B.S., M.D., Ph.D., Assistant Professor of Surgery, St. Louis University School of Medicine, St. Louis. Paper. Price, $2. Pp. 82, with 32 illustrations. St. Louis: C. V. Mosby Company, 1943.

An experienced teacher of experimental surgery for undergraduate medical students has prepared a laboratory guide for a course in this field. The manual comprises an introduction setting forth the purpose of the course and general directions for the organization of an operating team, the preparation of instruments, drapes, suture material and anesthesia. Thirteen exercises, each consisting of a chapter, deal with technic for most of the major surgical procedures in the abdomen, in the thorax and on the nervous system—in short, the whole field of operative surgery. The author has effectively combined experimental physiology, pharmacology, pathology and surgical technic. At the end of each exercise there are a bibliography and a list of questions for discussion, an appropriate chart of the animal's condition during operation to be filled out, space for postoperative progress notes and blank space for the student to make additional notes of his own. The book is adequately illustrated by clear diagrammatic line drawings, figures and charts. By way of criticism certain features may be pointed out: The author has not included a number of the most recent advances in operative technic such as the so-called aseptic bowel anastomoses and improved gastrostomies; the problems of colon versus small bowel surgery are not emphasized; in some respects the academic treatment of the subject matter is overemphasized, as in the production of peritonitis where the student is directed to infect the peritoneal cavity with sponges dipped in cultures of B. coli (in the reviewer's opinion a more vivid procedure might be the production of a wound in the colon that is not repaired, or the smearing of the animal's own colon contents over the peritoneal cavity). The bibliographies, while adequate enough, include a large number of references to works published ten or more years ago. Among the questions to be pondered by the student are a number of problems which are still quite controversial among experienced surgeons. The merits of this work, however, outweigh its weaknesses, and the author is to be commended for his efforts in producing a formal plan and guide for the student in this subject. The manual is printed in mimeograph form and is conveniently bound loose leaf to permit the addition of notes and other subject matter.

Health Practice Indices. Compiled from the Evaluation Schedules Submitted for the National Health Honor Roll for the Years 1941 and 1942. Prepared by the Sub-Committee on Manual and Appraisal of Local Health Work for the Committee on Administrative Practice of the American Public Health Association. Paper. Pp. 73, with illustrations. New York, [n. d.].

This is a graphic representation by means of bar charts of various public health procedures based on actual practice in a group of reporting cities, counties and health districts. It is compiled from the evaluation schedules submitted for the National Health Honor Roll of the United States Chamber of Commerce Interchamber Health Contest. It contains charts indicating the prevalence of standard practice in communicable disease control, tuberculosis and venereal disease control work, maternal, infant, preschool and school health practices and sanitation, food control and milk control.

The information for a given activity, such as percentage of antepartum cases known to have medical supervision, is portrayed with the most favorable reports at the top and the others ranged in decreasing order toward the bottom of a horizontal bar chart. In this particular activity the cities in the upper quartile range from almost 100 per cent down to 80 per cent of antepartum cases known to have had medical supervision. The percentages in the second quartile range from 79 to 66. In the third quartile the range is from 55 to 18 and in the lower quartile from 18 to 2 or 3. In this particular instance approximately 20 per cent of the communities reporting give no data or incomplete data.

The use of such a chart to the local health administrator is by comparing his own performance with that of others through finding its position in the chart. If he is in the upper quartile he is among the best. If he is in the lower quartile or below the base among those having no data or inadequate data his community is in serious need of improvement.

Throughout the book the charts indicate that few of the public health procedures are universally well performed. Few of the best organized health departments in the nation on which these graphs are based will be found approaching 100 per cent. The graphs showing best performance are those in the oldest field of public health, namely the various branches of sanitation. Perhaps these charts contain a suggestion that before governmental medicine is extended into the field of medical care there is room for vast improvement in accepted standard public health procedures.

Fifty Years of Service: A History of the Mary Hitchcock Memorial Hospital. By Leon B. Richardson of the Board of Trustees. Boards. Pp. 80, with illustrations. Hanover, New Hampshire, [n. d.].

This book, which commemorates the completion of fifty years of service, is a history of the Mary Hitchcock Memorial Hospital since its establishment in 1893. It is a story of the growth and development of an institution, its organization and management, financial aspects, community responsibility and support, expansions and readjustments, scope of hospital service, educational activities and other functions. These factors have been described in a clear and effective manner in relation to five separate administrative periods through which the hospital has passed. The author also reviews the present needs of the institution and anticipates with confidence that in a community of resourceful and public spirited citizens the hospital will have little difficulty in meeting whatever requirements the future may impose.

Authority in Medicine: Old and New. By Major Greenwood, D.Sc., F.R.C.P., F.R.S., Professor of Epidemiology and Vital Statistics in the University of London. Boards. Price, 40 cents. New York: Macmillan Company; Cambridge: University Press, 1943.

This Linacre lecture concerns principally the extent to which the writings of Galen dominated medicine for many years and moves on to a consideration of the manner in which research goes beyond authority. The conclusion is a testimony to Walter M. Fletcher, who first headed the British Medical Research Council.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

MORPHINE AND SHOCK

To the Editor:—In the *Bulletin of the American College of Surgeons* 28: 109 (June) 1943 in the article "The Injured in Combat Zones" it is emphasized that morphine should not be given in head injuries; and in Dean Lewis's Practice of Surgery (vol. XII, chapter 1, p. 281) I find that, in the treatment of shock complicating cranial injuries, liberal doses of morphine should be given. Why do some authors advise against the use of morphine in the treatment of shock accompanying head injuries? Is it because of the depressive action to the respiratory centers? Doesn't the good effect of morphine in shock justify its use in spite of its ill effect on the respiratory centers?

Albert Borges, M.D., Endicott, N. Y.

ANSWER.—The hypodermic administration of morphine in the treatment of traumatic shock following head injury has its advocates and its opponents. By reason of the potent depressive action of the drug on the respiratory center, the use of liberal doses of morphine should be formally contraindicated in any type of severe shock, whether involving craniocerebral injury or not. The available evidence indicates that in head injury, unless given in minimal doses, morphine contributes to aggravation of anoxia and death. On the basis of careful work, Gurdjian, Webster and Sprunk (Studies of the Spinal Fluid in Cases of Injury to the Head: Effect of Drainage, Isotonic Fluids, Morphine and Soluble Phenobarbital, U. S. P., on Cerebrospinal Fluid Pressure, *Arch. Neurol. & Psychiat.* **42**:92 [July] 1939) emphasized the dangers attendant on the use of morphine in cranial injury and concluded that this drug should hardly ever be used in the treatment of this condition, especially in severe cases, not only because it masks symptoms and depresses respiration, but because it produces a tremendous rise in cerebrospinal fluid pressure which may endanger the life of the patient. Phenobarbital, which is much less harmful and fairly effective in quieting these patients, may be advantageously substituted for morphine.

OXYGEN ADMINISTRATION WITH B. L. B. FACE MASK

To the Editor:—I should like to have some information on the administration of oxygen to patients unconscious from head injuries complicated by other injuries. I use a Boothby-Lovelace-Bulbulian face mask with 100 per cent oxygen at the rate of 6 to 8 liters per minute. The percentage of oxygen reaching the alveoli is one of the points in doubt. With the patient breathing about 36 to 40 times a minute and the mask held in place by an attendant, what is the probable percentage of oxygen reaching the alveoli? Are there any dangers associated with prolonged administration of oxygen under such circumstances? What percentage of oxygen administered over a prolonged period can cause damage to pulmonary tissue? Can such a percentage be reached by the use of a B. L. B. mask? References or authorities cited would be helpful.

Captain, M. C., A. U. S.

ANSWER.—In the use of oxygen equipment, if 100 per cent oxygen is inhaled it will be diluted by water vapor and carbon dioxide before reaching the alveoli. If the Boothby-Lovelace-Bulbulian face mask is used and the reservoir bag does not collapse during any inspiration, except for the dilution stated, for all practical purposes the only other gas in the alveoli will be oxygen. If during inspiration the reservoir bag collapses, the resistance of the sponge rubber disks will be overcome by air drawn in to dilute the oxygen. The amount of this dilution, i. e. the point during inspiration at which the bag collapses, will depend on the flow from the oxygen regulator and the minute respiratory volume of the patient. In a patient breathing from 36 to 40 times a minute a flow of 6 to 8 liters per minute would not keep the bag from collapsing, depending, however, on the depth of each respiration. With a respiratory rate of 40 times a minute assuming perhaps 400 cc. tidal volume, a flow of over 16 liters per minute would be required to maintain 100 per cent oxygen in the inspired air. In the case cited it would be estimated that approximately 40 to 50 per cent oxygen would be added to the air inhaled. Breathing of 100 per cent oxygen over prolonged periods, twelve to twenty-four hours, by normal persons does not cause appreciable damage of pulmonary tissues at atmospheric pressure or less. When using a mask, essentially 100 per cent oxygen may be used indefinitely without fear of damage. It is suggested that flows be turned to 10 or 12 liters per minute if high oxygen concentrations are required for patients with rapid respiration.

HEADACHES, DIPLOPIA AND FIXED PUPIL

To the Editor:—Please give me prognosis and treatment, if any, in the following case: A man aged 29 had a fractured skull in 1933 and was hospitalized for sixty-eight days. He has since been having severe frontal headaches and occasional diplopia at night, which is relieved by analgesics. In 1938 he received a slight brain concussion but was not hospitalized or put at bed rest. He has been refused by the Army and the Merchant Marine because of lack of any pupillary reaction to light. Examination at this time reveals blood pressure 120/80, weight 142 pounds (64 Kg.), height 5 feet 5 inches (165 cm.); examination of ear, nose and throat negative. The pupils are clear and regular, are of normal size, and show no reaction to light or in accommodation; the fundi are small but otherwise normal. There are no cranial nerve disturbances; the chest is clear, the heart normal, rate 76 per minute, rhythm regular. There are no murmurs or enlargements. The abdomen and extremities are normal. The abdominal and cremasteric reflexes are normal; deep reflexes are not present; the Babinski reflex is negative on both sides. The Wassermann test is negative; no spinal Wassermann test has been made.

M.D., New York.

ANSWER.—A fractured skull of ten years ago would have no bearing on the patient's present headaches and double vision. Lack of pupillary response suggests syphilis in spite of the negative Wassermann reaction. A spinal fluid Wassermann test would probably be in order with examination of the pressure at the time. A brain tumor is the only other possibility.

INDUCTION OF JAUNDICE

To the Editor:—A selectee has been deferred from military service on account of "subclinical jaundice." The question of the legitimacy of this claim has come up, and I wish to know whether it is possible for the condition "subclinical jaundice" to be self induced; that is, whether it is possible for a person to take bile salts by injection or by mouth or to raise his icterus index above normal by any other means in order to receive this classification.

M.D., North Carolina.

ANSWER.—It is quite possible for jaundice to be self induced. Many of the coal tar derivatives may cause mild degrees of jaundice in sensitive persons. The following are but a few of the many drugs which are known to cause jaundice: chloroform, toluene, benzene, carbon tetrachloride, dinitrophenol, cinchophen and arsphenamine. During treatment of malaria with atabrine it is not uncommon to see jaundice develop. Bile salts are definitely hemolytic and may cause jaundice if injected into the blood stream, but it is not likely that it could be controlled so as to produce mild jaundice without causing other toxic symptoms. Amounts possible to be taken by mouth will not cause a normal person to have jaundice. It is well known that the determination of the icterus index (Meulengracht test) may give high values in carotenemia, and the ingestion of large amounts of carrots could influence the test to a degree sufficient to suggest subclinical jaundice.

STIMULATING DOSE OF TOXOID AFTER EXPOSURE TO DIPHTHERIA

To the Editor:—My attention has been called to the fact that some physicians give a stimulating dose of diphtheria toxoid to persons who have been exposed to diphtheria with the understanding that this would be sufficient to increase the antibody content for protection. I should like to know whether this practice is feasible.

M.D., Louisiana.

ANSWER.—If some years previously the patient had been inoculated with diphtheria toxoid followed by a negative Schick test, it would be feasible to administer a stimulating dose of diphtheria toxoid if exposure to diphtheria was anticipated as a possibility. But if the person had never been immunized and was known to be susceptible, the injection of toxoid at the time of exposure to diphtheria could not be relied on for protection. Under the latter circumstances diphtheria antitoxin would be indicated. Those who are Schick negative when exposed to diphtheria should not require either toxoid or diphtheria antitoxin as a prophylactic.

TOXIC REACTION TO SULFAMERAZINE

To the Editor:—I have been neglecting to report a case of toxic reaction to sulfamerazine. On Oct. 13, 1943 a girl aged 13 was seen who had sore throat and fever. She was given sulfamerazine at the rate of 1 Gm. every six hours until a total of 9 Gm. had been administered. This medication was discontinued two days later because it seemed to make her feel worse. She complained of pain in the flanks which the family considered possible appendicitis. I saw her on October 16, at which time she had a normal temperature and complained of pain in both flanks and both sides of the abdomen (not appendicitis). Urinary output decreased, becoming scanty and bloody on October 17. On the 18th her condition was good; the urine specimen contained both gross and microscopic blood (no possibility of menstrual contamination). An uneventful recovery was made. I thought this case should be reported because the medicine was detailed to us here as peculiarly free of danger to the kidneys.

Melvin A. Drake, M.D., Buhl, Idaho.